DOCUMENT RESUME

ED 352 931 IR 015 871

AUTHOR	Braden, Roberts A., Ed.; And Others
TITLE	Visible and Viable: The Role of Images in Instruction and Communication. Readings from the Annual Conference of the International Visual Literacy Association (18th, Commerce, Texas, 1987).
INSTITUTION	International Visual Literacy Association.
PUB DATE	87
NOTE	310p.; For the proceedings of the 23rd conference, see IR 015 872.
PUB TYPE	Collected Works - Conference Proceedings (021) -- Reports - Research/Technical (143)
EDRS PRICE	MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS	Art Education; Cognitive Style; *Computer Assisted Instruction; Critical Viewing; Desktop Publishing; *Educational Technology; Elementary Secondary Education; Graphic Arts; Library Role; Library Skills; Mass Media; *Microcomputers; Nonverbal Communication; Signs; Television Viewing; Visual Aids; *Visual Learning; *Visual Literacy; Visual Perception

ABSTRACT

Presentations at the International Visual Literacy Association conference are grouped under five topics, a prologue, and an epilogue: (1) Prologue--"Writing About Visual Literacy" (Roberts A. Braden); (2) Visible Language--four papers concerning picture books, the Macintosh and Laserwriter, the design of library signs, and visual literacy and library programs; (3) Curriculum and Instruction--seven papers including interdisciplinary approach for K-12 students, a critical viewing guide for children, a course in visual communication, media in the integrated curriculum, media education for physically handicapped adolescents, visual processing using computers, and learning styles; (4) Art and Images--four papers about a visual arts index system, visual literacy and the curriculum, art education by radio, and art analysis by computers; (5) Technology--five papers concerning public speaking and computer visuals, computer use in the humanities, educating in the television age, developing computer screens, and electronic images; (6) Theory and Communication--15 papers on the topics of word and image, multi-image presentation in education, graphic design, programmed visualization, mass communications, a reverse design process, library media skills, functions of visuals, reading visual texts, visual literacy in ancient and modern man, the projected and televised image, perceptual flexibility and figure-ground strategies; and (7) Epilogue--"Desktop Confusion" (Darrell G. Beauchamp). (ALF)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED352931

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☐ This document has been reproduced as received from the person or organization originating it

☐ Minor changes have been made to improve reproduction quality

● Points of view or opinions stated in this document do not necessarily represent official OERI position or policy

112015871

"PERMISSION TO REPRODUCE THIS MATERIAL IN **OTHER THAN PAPER COPY** HAS BEEN GRANTED BY

Alice D. Walker

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)"

BEST COPY AVAILABLE

The Role of Images in Instruction & Communication

Readings from IVLA 1987

Readings from the 18th Annual Conference of the International Visual Literacy Association

Edited by

Roberts A. Braden

Darrell G. Beauchamp

and

LaVerne W. Miller

Published at
East Texas State University
Commerce, Texas
1987

ACKNOWLEDGMENTS

The editors wish to acknowledge the complete cooperation and assistance accorded them by the several authors of this book. We are particularly grateful for the many telephone calls, the carefully packaged manuscripts, the quick revisions, and for the cheerful manner in which all of our suggestions were received. Because our request was for camera ready papers, we are particularly pleased by the care given to the appearance of most of the manuscripts received. Not every author had the facilities to prepare finished copy, so we also wish to give our thanks to three volunteers who assisted us with the few papers which required final typing. Thank you, Marcille Tucker, Carrisa Tucker, and Yi-Su Brasel.

A special tribute is due to our contract printers, the Henington Publishing Company of Wolfe City, Texas. They showed us ways to get the book together more quickly and at less expense. We enjoyed their friendliness, and they met us more than half way, which is a pleasant surprise in today's business world.

Copyright © 1987. International Visual Literacy Association, Inc.
c/o LRC-ETDiv, Blacksburg, VA 24061

TABLE OF CONTENTS

Prologue

Writing About Visual Literacy
Roberts A. Braden 1

Visible Language

The Medium of Wordless Picture Books: An Overview of Classroom Applications
Trudy G. Wilson 5

Using the Macintosh and Laserwriter: A Case Study in Visual/Verbal Productivity
Tilman J. Ragan, John C. Belland, and Margaret A. Smith 21

Effective Communication and Better Access: Improving the Design of Library Signs
Andrew R. J. Yeaman 29

Visual Literacy Enhancement Through Library Programs
Rhonda S. Robinson 35

Curriculum and Instruction

An Interdisciplinary Approach for Students K-12 Using Visuals of All Kinds
Lyn Lacy 45

Watch: Critical Viewing Guide for Children
Ronald E. Sutton 51

Elements of a Short Course in Effective Visual Communication
Jackson Tiffany 55

From LOGOS to LOGON[1]: Media in the Integrated Curriculum
W. Nikola-Lisa 65

New Approaches in Media Education for Physically Handicapped Adolescents
Karon Sherarts 75

Visual Processing: Using Computers to Do for Visual Literacy Instruction What Word Processing Can Do for Writing Instruction
Tillman J. Ragan and Landra L. Rezabek 87

Learning Styles and Instructional Technology
Barbara Duffy 95

Art and Images

Visual Arts Index System
Douglas Marschalek 101

Visual Literacy Across the Curriculum
LaVerne W. Miller 105

"Let's Draw": Art Education by Radio. A Historical Study
Mary F. Kelly 113

Computers for Art Analysis
Howard Besser 121

Technology

Public Speaking with Computer Assisted Visual Images: A Key to Creativity
James C. Wolf 131

Non-Traditional Computer Use in the Humanities Classroom
Bernard Brenner and Mary Anne Atkinson 137

Educating Youth in the Television Age
Marieli Rowe 143

Dynamic Viewing -- Developing Effective Computer Screens for Computer-Assisted Instruction
Candice M. Zacher 147

The Power of Electronic Images: Changing Our Relationship to Knowledge
Dennis M. Adams and Mary Hamm 159

Theory and Communication

Image-Word-Image
Rune Pettersson 165

Can Multi-Image Presentations Be Affective and Effective in Education
H. Custer Whiteside 183

Considerations for Graphic Design of Projected Media
Carol Massoth 197

Programmed Visualization -- Bidden Mental Imagery for Instructional Design and Scripting
David G. Gueulette 205

The Function of Visuals in Mass Communication
Sandra Moriarty 221

Catering to the Visual Audience: A Reverse Design Process
Roberts A. Braden and Darrell G. Beauchamp 227

K-12 Curriculum Integrated Library Media Skills: The Impact of Visual Motivators
Beverly L. Good 233

Collecting Stories and Images Using Visual Media with Oral History
Beverlee Kissick 241

Defining the Functions of Visuals Used to Support Verbal Narration in Audiovisual Presentations
Forrest G. Wisely 247

Reading the Visual Text: Dancing to the Music
Robert Muffoletto 251

Seeing Is: Understanding and Remembering
Jeannie Harms 257

Visual Literacy in Ancient and Modern Man (Part I)
Hillel A. Schiller 263

Tracing the Codes of Educational and Instructional Television
Ann Devaney Becker 285

Aspect Ratio: The Projected and Televised Image
Charles Forrest 293

Learning Perceptual Flexibility Through Figure-Ground Strategies in 2-D Design
Mary S. Witte 303

Epilogue

Desktop Confusion
Darrell G. Beauchamp 311

Writing About Visual Literacy

by

ROBERTS A. BRADEN

Did you know that dozens of people recently have been writing about visual literacy? the *Journal of Visual Verbal Languaging* is going into its seventh year of publication. Also, for nine consecutive years the International Visual Literacy Association has sponsored an annual book of readings. You are reading from the most recent volume in that set. The cooperation and participation of many people each year has been the critical factor which made all of these books possible. The individuals who have helped know who they are. They also know about the unusual circumstances that surround the publication of this growing collection of written materials. The purpose of this paper is to let the rest of you in on some of these interesting matters. The effort may answer some of your questions.

For instance, did you ever wonder why visual literacists would bother to put anything in writing when they might as easily be creating something *visual*? Or, perhaps you have pondered the more direct question, "How is it possible to get enough visually oriented people working together on a (mostly) verbal project as ambitious as writing a book?" One answer is that the compilation of the IVLA books of readings has revealed to me flaws in the notion that people are either "VISUALS" or "VERBALS". The The either-or dichotomy is wrong, but even if it were not, it creates a fallacious implication that the (so called) *visuals* think and communicate best in images, disdaining the use of the printed word. Things are not that simple. Moreover, even those individuals who demonstrate a strong visual orientation have shown themselves to be practical about the advantages of verbal communication. *In practice the issue is not visual versus verbal.* (Even the most visually oriented reader can appreciate that alliterative ring, "VISual. VERsus VERbal" It is very very verbal, and upon that note, you *visuals*, I rest my case.)

Reasons to Publish.

Visual literacy authors like their counterparts in other fields of inquiry have sundry motives for writing and having their work published. A few are under academic pressure to publish as a preferred alternative to perishing. The academic authors provide a special intellectual flavor and a feeling of substance to the books, and at the same time make important contributions to the scholarly literature of the field. Other authors find these annual books to be an outlet for their ideas on topics which have few publication outlets. The majority of the collected papers, year in and year out, have been "presented" at the annual conference of IVLA. A few of the papers were "invited", i.e., written after the presentation in an attempt to lend permanence to a topic that was well received by an IVLA audience. The most interesting reason, and the one most often given for submitting materials to be published in the IVLA Readings, is that the authors want to share their ideas, experiences, and results with others of kindred spirit.

Immortality and glory are stimuli for some writers. Once set in print, a theory or even a budding thought becomes a matter of record, duly noted in the pages of history, so to speak. Although the authors of visual literacy readings have not been crass seekers of personal aggrandizement, the annual books of readings have achieved a modest level of recognition. Thus, acceptance of a paper for inclusion in this book will bestow a small grain of prestige but is unlikely to make the writer famous. However, the glory and longevity of the visual literacy movement are enhanced by collaborative efforts of this sort, and many authors contribute "for the glorification of the cause."

A parallel motivation is advocacy. Within the circle that binds visual literacists are representatives of several professions. As a result we find authors who want to be sure that the artists' point of view, or the photo therapists' techniques, or the visual thinking theorists' ideas, or the teacher's new approach to critical viewing skills, or any other parochial position is adequately represented in these compiled writings about visual literacy. We are fortunate that a few people are so motivated. Their participation assures us that the true diversity of the field is captured in print.

Referees and Standards

Since 1981 when this author first became involved with the editing of the annual IVLA books, 183 contributions have been accepted for publication. (Braden & Walker, 1982; Braden & Walker, 1983; Walker, Braden, & Dunker, 1984; Thayer & Clayton-Randolph, 1985; Miller, 1986; and Braden, Beauchamp & Miller, 1987) The selection system has not changed markedly over that period of time, but the procedure has tended to standardize itself and to become more effective and efficient.

The heart of each book is the set of conference papers for that year. To insure suitability and quality, a proposal procedure is followed. First, a committee is appointed by IVLA. The committee obtains a conference theme for the upcoming conference and issues a call for papers. The referee process is applied at the proposal stage rather than later when completed papers are available. While this is less rigorous than the procedures for some other organizations, it is appropriate for IVLA, an organization whose conferences are saturated with highly visualized presentations. Frequently a presentation is proposed that promises to be a visual extravaganza, but one that will not be reducible to written form. The proposal committee accepts some proposals, rejects others, and negotiates changes or clarification of still others. Accepted proposers are furnished with guidelines for the preparation of their papers. (e.g., Braden, 1984) When the presentation has been made, the papers are collected by the editor(s) of the Readings. A final screening takes place to select the contents of the next book. Invited papers are contemplated and solicited, if appropriate. Other conference readings from the IVLA sessions at the Association of Educational Communications and Technology (obtained via the identical procedure as for the IVLA conference papers) have been added, when available and suitable.

Caveats and Disclaimers

You may have read a statement somewhere in a preface whereinthe author of a book gallantly took credit for all errors of commission and omission. You did not read it in an IVLA *Readings*. In the IVLA books things are exactly the other way around. The editors don't take credit for any of the errors except their own. That is not meant as an excuse, and the reader may very well be asking, "Well, why aren't the editors at fault for every imperfection?" The answer is simple. The editors ARE responsible for creating a *system* that allows errors to be injected which are beyond editorial control. The *Readings* editors ARE NOT responsible for the occasional glitches which have been allowed to creep in by individual authors.

Time and money are the real culprits. Here's why. The IVLA conference is held in November. Authors' manuscripts reach the editors in December. The holiday season impinges upon the editors' time in December and makes communication between authors and editors difficult. Even so, each paper is read and comments are sent to the author recommending whatever changes are needed. The author is given only a few days to revise, re-format, and polish. His or her paper is needed the first week of January. That leaves almost no margin for error.

Why? Well, for various reasons the completed books are wanted by the end of February. The printer demands at least 30 days from acceptance of the manuscript to delivery of the finished product. Therefore, the bulk of that which gets done must be done during the one month of January. Manuscripts are still arriving at the end of the first week. Then, because the publication cost is cut in half if everything is laid out and camera ready, the last couple of weeks of January are consumed with layout and other physical tasks that go into the assembly of the volume. To make even those minimal chores possible, every author is encouraged to submit camera ready copy. Not all of them have the facilities or equipment needed, however, so the editors pitch in with some typing help.

That was a lengthy explanation, but it explains why we print 80% of the papers *exactly as received in final form from the authors.* Since everybody associated with these books donates their time, except the printer, we expect that the shortcuts will continue and that a few glitches will persist.

A CHALLENGE (or is it a contest?)

As we have laid the pages out, we have noted a *few* comma splices, split infinitives, misspellings, typographical errors, extra commas, omitted commas, colons in place of periods, commas in place of semicolons, missing hyphens, gratuitous hyphens, tense errors, and failure of verbs to agree with their subjects. Also, had we been grading English papers, we might have made a few structural recommendations. We weren't, however, and we are really rather pleased with the overall quality of these papers. That is especially true considering that no time was available for an editorial polishing phase. But, enough of that.

We we're not bragging. We're not appologizing. We're challenging. Yes, we challenge those readers who are so inclined to make a list of every glitch, boo-boo, blunder, and mistake they can find. The person who submits the longest list of errors will be given a FREE COPY of the 1988 Readings. Of course the winner will be expected to be an Associate Editor and help proofread next December, and the following December, and the following December.

BEST COPY AVAILABLF

REFERENCES

Braden, R.A., & Walker, A.D. (Eds.) 1982. *Television & visual Literacy.* Bloomington, IN: International Visual Literacy Association, Inc.

Braden, R.A., & Walker, A.D. (Eds.) 1983. *Seeing ourselves: Visualization in a social context.* Blacksburg, VA: Virginia Politechnic Institute and State University.

Walker, A.D., Braden, R.A., Dunker, L.H. (Eds.) 1984. *Visual literacy -- enhancing human potential.* Blacksburg, VA: Virginia Politechnic Institute and State University.

Braden, R.A. (1985) The stylish look: A format for visual literacy writers. In N.J. Thayer & S. Clayton-Randolph (Eds.) *Visual Literacy: Cruising Into the Future.* Bloomington, IN: Western Sun Printing Co., Inc.

Thayer, N.J., & Clayton-Randolph, S. (Eds.) 1985. *Visual literacy: Cruising into the future.* Bloomington, IN: Western Sun Printing Co., Inc.

Miller, L.W., (Ed.) 1986. *Creating Meaning.* Silver Spring, MD: International Visual Literacy Association, Inc.

Braden, R.A., Beauchamp, D.G., & Miller, L.W. (Eds.) 1987. *Visible and viable: The role of images in instruction and communication.* East Texas State University, Commerce, TX: International Visual Literacy Association, Inc.

The Medium of Wordless Picture Books: An Overview of Classroom Applications

by

TRUDY G. WILSON

Introduction

Communication in the purely visual mode predates all other forms. Long before our ancestors used an organized language, communication was accomplished through facial expression and gesture. As verbal language emerged and developed, visual imagery also developed as a viable means of expression and record keeping. Important events were documented with painted, drawn, and carved visual symbols. Cave walls in various parts of the world hold evidence of hunting procedures and tribal rituals in the form of paintings and carvings done by palaeolithic peoples. As civilization and language developed, these images became more sequentially organized, much like sentences. As communication became more important for sociological, political, and religious reasons, simplified picture symbols were create.

Early cultures developed their own individual styles of picture languages. Egyptians invented hieroglyphics that consisted of thousands of picture symbols for the names of objects as well as symbols for sounds and concepts. The Phonecians adopted an alphabet of pure sound symbols from the Semites and spread it to the many cultures with which they traded. The Greeks, and then the Romans simplified and refined combinations of these symbols into our modern alphabet. The twenty-six letters used in modern European languages today are little changed since Medieval times. However, other modern cultures still use highly stylized picture symbols for their languages. Korean, Chinese, and Japanese calligraphies are basically visual symbol systems.

Written communication consisted almost entirely of hand-lettered documents up to the fifteenth century and was limited to legal, religious, and business purposes. Since verbal illiteracy was the usual condition, visual documents were published for the common people. An example is the Imagerie Populaire consisting of religious prints sold outside cathedrals and compiled into booklets for worship at home. With the invention of the printing press, books became more available. Comenius' Orbis Sensualium Pictus, first published in 1657, was the first pictorial encyclopedia for both children and adults. Prints of animals, plants, and daily situations are accompanied by an explanatory text in the native language and in Latin.

Linear communication through print became important because of its efficiency in transferring technological ideas. Few books included illustrations that were not essential to the subject being discussed. Also a factor was the expense of including illustrations, wood or metal engravings done by hand. Usually, only technical drawings, graphs, and charts were included. The transition to verbal-print from the visual as a means of formal communication was almost complete.

The invention of photography in the early 1800's and the development of photo-engraving and the offset printing press in the late 1800's greatly expanded the printing industry. Illustrations could now be included easily and inexpensively. At the same time, movements in American education demanded the publication of both illustrated text books and general interest books for children. The importance of the visual element in instructional materials has continued to increase.

Communication through visual media is increasingly influential in our culture as has been emphasized by the popularity of photography, film, and television. The wordless picture book fits into this list as a purely visual form. What Whiskers Did by Ruth Carroll, first published in 1932 and re-introduced in 1965, was the first modern example of this genre. Since the 1960's, many books have been published covering almost every facet of children's interests.

This paper will identify leading examples of research and opinion on the importance of the wordless picture book. A variety of methods for using these books in the classroom will be suggested and a list of relevant titles given for each section.

Instructional Applications

Wordless picture books may be used in teaching a variety of skills to children of preschool through college age. The following headings will address specific goals from throughout educational curricula.

Visual Literacy

Children acquire visual language abilities in infancy long before they develop verbal abilities. The baby smiles when mother smiles, the mouth opens when a food-laden spoon approaches. The child becomes oriented to the world through developing senses. As children mature, the importance of visual abilities becomes more important. It has been estimated that ninety-four percent of the stimuli to which individuals respond are visual or auditory, and the majority of these are visual (Clayback, Goforth, and Spillman, 1980).

A natural extension of this interest is the fascination with television. Current research states that most children in our culture are watching television by the early age of two years (Singer, Singer, and Zuckerman, 1981). Television may provide the first step in the understanding of visual language and literary organization, but it is not paced for easy assimilation by small children, nor is the subject matter always appropriate or simple to understand. The five year old child begins formal education with a great repertoire of visual experience but with very little training in how to understand or use it. As D'Angelo (1979) observes: "The ability to analyze and interpret pictures, which precedes reading words, is a natural step in the process of language and development."

At this point in the education of the child, the wordless picture book is of great value. It is a vehicle for the teaching of oral, written, and visual literacy. For the purposes of this paper distinctions between these three modes of communication must be made. The written and oral languages are different forms that use the same set of verbal symbols. The visual language uses the artist's elements of design as well as gesture and facial expression. A visually literate person can understand the world as seen, organize visual elements perceptually according to needs, and evaluate them. Together, these three languages allow for the most complete understanding of messages.

As Clayback, Goforth and Spillman state, "learning one language (visual) often supports the learning of another (verbal). Each language must be taught in combination with the other.' (1980). A basic understanding of visual language, an understanding of the most highly developed language the child has when entering school, facilitates understanding of the verbal language.

The wordless picture book can be used to help the child understand both languages. Cianciolo, in her article on this subject states:

> Pictures do speak a language, if you will. But one must be visually literate in order to speak (or read) that universal language. In other words, one must be able to bring meaning and significance to the shapes, positions, and movements that are depicted by the book artist as he tells his stories in pictures. (1973, p. 226)

Visual skills closely resemble verbal skills as shown by Fransecky and Debes:

> A visually literate child can "read" visual language with skill. He can "write," that is, compose visual statements with skill, perhaps with eloquence. He can translate from the visual language to the verbal and vice versa. He has a basic understanding of the grammar of visual language and some realization that it parallels verbal language. He is familiar with and somewhat skilled in the use of the tools of visual communication. And, finally, of course, he is developing a critical sensibility toward visual communication. (1972, p.7)

Wordless picture books can be used to teach awareness and usage of elements of visual vocabulary. Line, color, shape, and space are the basic elements from which visuals are composed. The child can decipher meaning from the type of line and shape or use of color in illustrations (Cianciolo, 1973). Line is an artistic convention varied in illustration according to the message intended. The characteristics of the line form used suggests a tone that is pervasive throughout the story. Thin, curved outlines denote delicacy, whereas bold, jagged outlines give the feeling of strength. Also, line is often used to create texture, giving information on surface qualities of the subject. Shading, in the form of crosshatching, gives three-dimensional rounding or depth to shapes within the image.

Color also conveys meaning. As Dondis wrote; "Color is in fact loaded with information and one of the most pervasive visual experiences we all have in common" (1973, p. 50). Color may mirror reality, give an overall tone to an entire book, or emphasize an image or idea. Color may be used in much the same way an author uses italics, bold print, or underlining (Storey, 1984).

An illustration consists of shape in simple or complex arrangement. Basic shapes convey a meaning understood by most viewers -- the stability of the square or cube; the continuity and warmth of circles or ovals (Reed & Smith 1982). Complex organic and geometric shapes are often dynamic. This shape or set of complex shapes making up the characters becomes the identity we recognize throughout the story.

The way space is used within the composition contributes to the total impact of the message. This arrangement of elements can be taught, showing how elements are organized to form a complete idea, just as words are used to form sentences (Hortin, 1980). Formal balance within a composition places the action in the center of the frame, giving the feeling of stability; an informal balance places the action off center, giving a feeling of dynamic movement. Another possibility for spatial organization involves the illusion of depth. The use of perspective sets a more realistic "stage" for the action -- the feeling of looking into, not just at the environment of the illustration. The angle-of-view used sometimes conveys a message about the characters. In comparing illustration with filmmaking, Considine (1986) observes: "A tilt up at an object or figure tends to make the subject strong, powerful, aggressive, etc. Tilting the camera down on the subject creates a sense of weakness, vulnerability, or insecurity " (p.40).

The artistic style used in creating a visual lends meaning also. The soft-edged, impressionistic illustration gives a different message from a sharp, high contrast image. A highly detailed or complex image often can be read a variety of ways, therefore lending itself to varied interpretation. Simple compositions have simple explanations and are appropriate for beginning level books.

The facial expressions and body gestures shown by characters are important parts of the message just as they are in real life. These indicators are often already known, but seeing them in context acts to reinforce the viewer's knowledge. Empathy with the characters is established and identity with the story confirmed

The use of visual symbols for people, places, events, and time is the mainstay of visual storytelling. Symbols for emotions of love, anger, fear, sadness, and happiness are used. The use of the "balloon" for thought in visual form is another type of symbolism. Also included are standard holiday and folktale symbols, road signs, and symbols for seasons of the year. Some symbols become stereotypes reflecting cultural values and beliefs.

Complex collections of the basic elements are tied together in each composition to form ideas. An understanding of the complete string of compositions in sequence gives the child the whole story. The ability to decipher meaning from the two-dimensional illustration can eventually be transferred to the three-dimensional world.

Suggested titles for visual literacy:
One, Two, Where's My Shoe , Tomi Ungerer
Sunshine, Jan Ormerod
Clementine's Cactus, Ezra Jack Keats
The Gray Lady and the Strawberry Snatcher, Molly Bang
Anno's U.S.A., Mitsumasa Anno
Anno's Italy, Mitsumasa Anno
An Edwardian Christmas, John S. Goodall
Frog Goes to Dinner, Mercer Mayer

Reading Readiness

The basic skill of handling books is taught by simply following the story page by page. Sequencing is more obvious in some books because of the conventions used. Illustrations may begin on one page and end on the next, thus leading the child to turn the page in the proper left-to-right order. The action of the story may be contained in frames laid out across the page in sequence. A cliff-hanger effect may be used to entice the child to turn the page to see what happens next.

As children "read" through all the details in the illustrations in a book, they may infer many variations of the original story. In her article on how to use wordless picture books to develop reading readiness, Degler (1979) states:

> They may simply "read" for the literal message or be encouraged to infer something not pictured. They may be encouraged to evaluate a character's actions or to empathize with some aspect of the unfolding drama. Thus, children can begin to engage in various types of thinking about what they are viewing, and in this way, to develop the kind of thinking strategies they must use later when they read. (p. 399)

The diversity of relevant interpretations not only helps the child develop creative abilities in story telling, but also gives the teacher an indication of the child's verbal language abilities (Stewig, 1980). When encouraged in this practice, a larger verbal vocabulary is built than would be possible in the presence of the written (and often limited) text. Indicating a story to a teacher or parent, the child sees the direct relationship between the oral story and its written form. This step is important for the child because it builds understanding of the process of story writing.

Suggested titles for reading readiness:
Do You Want to Be My Friend?, Eric Carle
The Great Circus Parade, Evelyn Curro
Moonlight, Jan Ormerod
The Adventures of Paddy Pork, John S. Goodall
Anno's Journey, Mitsumasa Anno

Literary Style

There has been some argument from critics of wordless picture books as to whether literary form in visuals can be compared on the same level of quality with literary form in print (Groff, 1974). A very narrow view of literature would indeed exclude anything but print; however, a broader sense of literary form will include all storytelling. Information comes to us in numerous forms other than print. We must consider the same attributes in these modes that we do in print literature. The wordless picture book inherently provides for the learning of thinking processes necessary for the understanding of literary structure. Kossack and Bader (1980), in their paper on visual literacy state:

> It is suggested that all basic processes of thought can and should be developed via visual media. Cause/effect, sequencing, predicting outcomes, main idea, identification of artistic mood, identifying fact/fantasy, and a myriad of other processes should first have their foundation in visual interpretation prior to their application to words, sentences, and paragraphs. (p. 7)

The wordless picture book inherently provides opportunity for the learning of these processes. If the child is made aware of these processes, dictates a story to the teacher, sees it in print, and is encouraged to recognize these artistic devices, the mental connection is made which is necessary for the recognition of literary style in print and visual media.

Suggested titles for literary style:
Dandelion Year, Ron McTrusty
The Ballooning Adventures of Paddy Pork, John S. Goodall
The Snowman, Raymond Briggs
Bobo's Dream, Martha Alexander
The Great Cat Chase, Mercer Mayer

Written Expression

Wordless picture books are useful as motivation for writing. The absence of text leaves the child free to interpret the pictures, but provides a basic plot to follow. With the help of the teacher, the child begins to see the differences between the spoken word and the written word. As a further experience, children may invent another ending to the story or extend it into another adventure.

Suggested titles for written expression:
The Wrong Side of the Bed, Edward Ardizzone
Flicks, Tomie dePaola
The Midnight Adventures of Kelly, Dot, and Esmerelda, John S. Goodall
The Happy Dog, Hideyuki Tanaka
By the Sea, Berthe Amoss

Older Readers

A few wordless picture books address themselves to people of all ages. Intriguing illustrations using ordinary shapes or lines in unusual ways encourage readers to observe their world more closely. Visual puns or illusions are the subject of several books. These elicit various interpretations, therefore stretching the imagination. As they mature, children will find new meanings in these books. A few show historical events either as the main story theme or as part of a complex theme. A small quantity are of a serious moral nature, showing the strengths and weaknesses of the characters, and in society in general.

As experience with life increases, the complexity of interpretation increases. High school and college students can find inspiration in the more sophisticated visual narratives. Creative writing assignments on psychology, sociology, history, and art are all possibilities.

Because of the sophisticated beauty of some wordless picture books, parents may be more inclined to share them with their children. Discussion between parent and child on a common subject matter builds effective family communication.

Suggested titles for older readers:
Look Again, Tana Hoban
The Silver Pony, Ward Lynd
Anno's Italy, Mitsumasa Anno
Above and Below the Stairs, John S. Goodall
The Damp and Daffy Doings of the Daring Pirate Ship, Guillermo Mordillo

Other Modes of Expression

Other forms of non-verbal communication are valuable teaching tools for all grades. Wordless picture books may be used as motivation for pantomime, dance, drawing, and sculpture (Stewig, 1980). They are "... excellent activities through which boys and girls express themselves while developing the ability to translate from the visual to the verbal and vice versa." (Clayback, Goforth, and Spillman, 1980, p.629). The ability to translate from one visual mode to another is an important part of visual literacy.

Suggested titles for other modes of expression:
Sing, Pierrot, Sing, Tomie dePaola
The Hunter and the Animals, Tomie dePaola
A Lesson for Max, Hanne Turk
Look Again, Tana Hoban
Changes, Changes, Pat Hutchins

Special Groups

These books are also valuable for teaching language disabled children or for remedial help. In an article on language disabled children, D'Angelo sees wordless picture books as valuable for children who have limited vocabularies and who have not yet acquired appropriate rules of syntax. Because the children are not distracted by print, they can supply as much or as little oral language as ability allows and at their own pace. With practice, they move from single words, phrases, and sentences to the production of complete, logically sequenced thought (D'Angelo, 1979).

Wordless picture books are also useful for hearing impaired children. In an article on books for special needs, Griff, Belden, and Mangini Rossi (1985) list interpretation of illustrations and story telling as important skills to be learned through the use of these books. The possibility of failure to read is reduced when children use these book as an introduction to reading. The child develops a positive self-concept and a better attitude toward books (Kossack & Bader, 1980; D'Angelo, 1979).

Suggested titles for special groups:
Shapes & Things, Tana Hoban
When?, Leo Lionni
Picnic, Emily Arnold McCully
Paddy Finds a Job, John S. Goodall
Anno's Counting House, Mitsumasa Anno

Appreciation of Art

The picture book artist uses imaginative powers, the elements of design, and various materials to create totally visual narratives. Artists have used almost every style of art in these books. Primitivism, representationalism, impressionism, pointillism, cubism, expressionism, and surrealism may be found.

A wide variety of art materials have been used. Paintings, prints, drawings, are most commonly found. Occasionally , there are collages, photographs, and paper sculpture illustrations. Artists may use different techniques, materials, and styles to illustrate the same concept.

Schwarcz (1982) sees wordless picture books as important for the growth of aesthetic literacy in children: "They constitute a minor art form which can aid in leading the child toward interpreting and valuing the more complex, ambiguous messages of art" (p.50). Therefore the child is not only learning how to understand visuals as concrete messages, but also as abstract messages.

Suggested titles for appreciation of art:
Round & Round & Round, Tana Hoban
Snail Where Are You?, Tomi Ungerer
Brian Wildsmith's Circus, Brian Wildsmith
Journey to the Moon, Eric Fuchs
The Eye of the Teddy, Frank Asch

Creativity

Among the dozen or so steps in the creative process are imagination, fluency, and flexibility, all of which use concrete information as their beginning point. In order for children to reach a point of creative thought, they must have a large repertoire of experiences and information with which to compare new knowledge (Winn, 1982). Wordless picture books offer a wide range of subject matter, including basic concepts, science, history, and fantasy that are indispensible as an easily accessible source of information. The act of telling a verbal story from pictures uses this process and assures the acquisition of the information presented. This practice leads to the acceptance of creative thought, both verbally and visually presented, as an important part of schooling. Encouragement in the development of creative ability is necessary for continued progress in problem solving for the child, and, to problem solving for all of civilization.

Suggested titles for creativity:
Topsy-Turvies, Mitsumasa Anno
The Gray Lady and the Strawberry Snatcher, Molly Bang
How Santa Had a Long and Difficult Journey Delivering His Gifts,
Fernando Krahn
Take Another Look, Tana Hoban
Changes, Changes, Pat Hutchins

Conclusion

In light of the increasing importance of visual media in the out-of-school environment, a new emphasis on understanding these media and on relating them to print media is crucial. An equal emphasis must be placed on oral, written, and visual media as basic forms of communication. Just as one must understand the structure and use of verbal forms, one must also understand visual forms to derive their meanings. Only then may the child develop a critical awareness of all three forms and be able to use them successfully. Wordless picture books fit easily into the present school curriculum in several subject areas and will be increasingly useful in creating more balanced curricula in the future.

References

Cianciolo, P. J. (1973).Use wordless picture books to teach reading, visual literacy, and to study literature. Top of the News, 29, 226-234.

Clayback, J., Goforth, F., & Spillman, C. (1980). Read, translate, compose, and evaluate: Visual language skills. Language Arts, 57, 528-634.

Considine, D. M. (1986). Visual literacy & children's books: An integrated approach. School Library Journal, 33(1), 38-42.

D'Angelo, K. (1979). Wordless picture books: Also for the writer. Language Arts, 56, 813-814.

Degler, L. S. (1979). Putting words into wordless books. The Reading Teacher, 32, 399-402.

Dondis, D. A., (1973). Primer of visual literacy. Cambridge, MA: MIT Press.

Fransecky, R. B., & Debes, J. L. (1972). Visual literacy: a way to learn -- a way to teach. Washington, D.C.: A.E.C.T.

Griff, P. R., Belden, M., & Mangini Rossi, M. J. (1985). Look again: Picture books are more than pictures. Instructor, 95 (2), 56-62.

Groff, P. (1974). Children's literature versus wordless picture books. Top of the News, 30, 294-303.

Hortin, J. A. (1980). Sources for developing a theory of visual literacy. (Report No. CS 006 152). Manhattan, KS: Kansas State University. (ERIC Document Reproduction Service No. ED 204 716)

Kossack, S. W., & Bader, B. (1980) Visual literacy: Foundation for comprehension. (Report No. CS 005 896). Norfolk, VA: International Reading Association. (ERIC Document Reproduction Service No. 200 892)

Read, D. & Smith, H. M. (1982). Teaching visual literacy through wordless picture books. Reading Teacher, 35, 928-932.

Schwarcz, J. H. (1982). The textless contemporary picture book: A minor art form. Phaedrus, 9, 45-50.

Singer, D., Singer, J., & Juckerman, D. M. (1981). Teaching television. New York: Dial.

Stewig, J. W. (1980). Children and literature. Chicago: Rand McNally.

Storey, D. C. (1984). Comprehension, visual literacy, and picture book illustrations. Reading Horizons, 23(1), 54-59.

Winn, W. (1982). Visualization in learning and instruction: A cognitive approach. ECTJ, 30, 3-25.

Wordless Picture Books: a Bibliography

Alexander, Martha. (1970). Bobo's dream. New York: Dial.
(1968). Out! out! out!. New York: Dial.

Amoss, Berthe. (1969). By the sea. New York: Parents Magazine.

Anderson, Laurie. (1971). The package: a mystery. New York: Bobbs-Merrill.

Angel, Marie. (1973). The ark. New York: Harper.

Anno, Mitsumasa. (1979). Anno's animals. New York: Collins.
(1982). Anno's Britain. New youk: Philomel.
(1982). Anno's counting house. New York:Philomel.
(1984). Anno's flea market. New York: Philomel.
(1980). Anno's Italy. New York: Collins.
(1978). Anno's journey. New York: Collins.
(1983). Anno's U.S.A. New York: Philomel.
(1970). Dr. Anno's magical midnight circus. New York:Weatherhill.
(1970). Topsy-turvies. New York: Weatherhill.

Ardizzone, Edward. (1970). The wrong side of the bed. Garden City, NJ: Doubleday.

Aruego, Jose. (1971). Look what I can do. New York: Scribners.

Asch, Frank. (1971). The blue balloon. New York: McGraw Hill.
(1973). In the eye of the teddy. New York: Harper and Row.

Bang, Molly. (1980) The gray lady and the strawberry snatcher. New York: Four Winds.

Barton, Bryan. (1971). Elephant. New York: Seabury.
(1974). Harry is a scaredy-cat. New York: Macmillian.

Baum, Willi. (1969). Birds of a feather. Reading, MA: Addison-Wesley.

Blanco, Josette. (1975). On the farm. New York: Child's Play.
(1975). Playtime. New York: Child's Play.
(1975). Sport. New York: Child's Play.
(1975). The weather. New York: Child's Play.

Bollinger-Sarvelli, Antonella. (1972). The knitted cat. New York: Macmillian.

Briggs, Raymond. (1977). Father Christmas. New York: Penguin.
(1980). Jim and the beanstalk. New york: Coward.
(1978). The snowman. New York: Coward.

Brinkloe, Julie. (1974). Spider web. New York: Doubleday.

Bruna, Dick. (1974). Another story to tell. New York: Methuen.
(1979). Miffy's dream. New York: Methuen.
(1968). Story to tell. New York: Methuen.

Burningham, John. (1977). Come away from the water, Shirley. New York: Crowell.
(1978). Time to come out of the bath, Shirley. New York: Crowell.

Cannon, Beth. (1976). A cat had a fish about a dream. New York: Random House.

Carle, Eric. (1972). A very long tail. New York: Crowell.
(1971). Do you want to be my friend? New York: Crowell.
(1973). I see a song. New York: Crowell.
(1974). My very first book of colors. New York: Crowell.

(1974). My very first book of shapes. New York: Crowell.
(1968). One, two, three, to the zoo. New York: World.
(1970). The very hungry caterpillar. New York: World.
(1972). The very long train. New York: Crowell.

Carrick, Donald. (1973). Drip, drop. New York: Macmillion.

Carroll, Ruth. (1968). The chimp and the clown. New York: Walck.
(1970). The Christmas kitten. New York: Walck.
(1974). The dolphin and the mermaid. New York: Walck.
(1973). Rolling downhill. New York: Walck.
(1965). What Whiskers did. New York: Walck.
(1973). The witch kitchen. New York: Walck.

Charlip, Remy, & Joyner, Jerry. (1973). Thirteen. New York: Parents.

Charlot, Martin.(1962). Once upon a fishook. New York: Island Heritage.
(1972). Sunny side up. New York: Weatherhill.
Crews, Donald. (1980). Truck. New York: Greenwillow.

Curro, Evelyn. (1963). The great circus parade. New York: Holt.

Daughtry, Duanne. (1984). What's inside. New York: Knopf.

De Groat, Diane. (1977). Alligator's toothache. New York: Crown.

de Paola, Tomie. (1979). Flicks. New York: Harcourt.
(1981). The hunter and the animals. New York: Holiday House.
(1978). Pancakes for breakfast. New York: Harcourt.
(1983). Sing, Pierrot, sing. New York: Harcourt.

Demi. (1981). Follow that line. New York: Holt, Rinehart, and Wilson.

Elzabieta. (1974). Little Mops and the butterfly. Garden City, NJ: Doubleday.
(1974). Little Mops and the moon. Garden City, NJ: Doubleday.
(1974). Little Mops and the seashore. Garden City, NJ: Doubleday.

Emberley, Ed. (1977). A birthday wish. New York: Little, Brown.

Espenscheld, Gertrude. (1966). The oh ball. New York: Harper & Row.

Ets, Marie H. (1968). Talking without words. I can, can you? New York: Viking.

Freeman, Don. (1976). The chalk box story. New York: Lippincott.

Florian, Douglas. (1982). The city. New York: Crowell.

Fromm, Lilo. (1972). Muffel and Plums. New York: Macmillian.

Fuchs, Eric. (1969). Journey to the moon. New York: Delacorte.

Giovannetti. (1977). Max. New York: Atheneum.

Gilbert, Elliot. (1963). A cat. New York: Holt, Rinehart, and Winston.

Goodall, John S. (1983). Above and below the stairs. New York: Atheneum.
(1968). The adventures of Paddy Pork. New York: Harcourt.
(1976). An Edwardian Christmas. New York: Atheneum.
(1980). An Edwardian holiday. New York: Atheneum.
(1976). An Edwardian summer. New York: Atheneum.
(1969). The ballooning adventures of Paddy Pork. New York: Harcourt.
(1975). Creepy castle. New York: Atheneum.
(1972). Jacko. New York: Harcourt.
(1983). Lavinia's cottage. New York: Atheneum.
(1973). The midnight adventures of Kelly, Dot, and Esmeralda. New York: Atheneum.
(1975). Naughty Nancy. New York: Atheneum.
(1981). Paddy finds a job. New York: Atheneum.
(1976). Paddy Pork's holiday. New York: Atheneum.
(1973). Paddy's evening out. New York: Atheneum.
(1980). Paddy's new hat. New York: Atheneum.
(1971). Shrewbettina's birthday. New York: Harcourt.
(1981). Shrewbettina goes to work. New York: Atheneum.
(1979). The story of an English village. New York: Atheneum.
(1977). The surprise picnic. New York: Atheneum.
(1981). Victorians abroad. New York: Atheneum.
(1981). The years before the war. New York: Atheneum.

Hamburger, John. (1971). The lazy dog. New York: Four Winds.
(1973). The sleepless day. New York: Four Winds.

Hartelius, Margaret. (1977). Birthday trombone. Garden City, NJ: Doubleday.
(1975). The chicken's child. Garden City, NJ: Doubleday.

Heller, Linda. (1979). Lily at the table. New York: Macmillian.

Hoban, Tana. (1976). Big ones, little ones. New York: Greenwillow.
(1974). Circles, triangles, and squares. New York: Macmillian.
(1972). Count and see. New York: Macmillian.
(1975). Dig, drill, dump, fill. New York: Greenwillow.
(1978). Is it red? Is it yellow? Is it blue? New York: Greenwillow.
(1971). Look again. New York: Macmillian.
(1973). Over, under, and through. New York: Macmillian.
(1972). Push pull, empty full. New York: Macmillian.
(1983). Round & round & round. New York: Greenwillow.
(1970). Shapes and things. New York: Macmillian.
(1981). Take another look. New York: Greenwillow.
(1974). Where is it. New York: Macmillian.

Hoest, William. (1967). A taste of carrot. New York: Atheneum.

Hogrogian, Nonny. (1972). Apples. New York: Macmillian.

Hutchins, Pat. (1971). Changes, changes. New York: Macmillian.
(1982). I hunter. New York: Macmillian.
(1968). Rosy's walk. New York: Macmillian.

Keats, Ezra Jack. (1982). Clementine's cactus. New York: Viking.

(1974). Kitten for a day. New York: Watts.
(1973). Psst! Doggie. New York: Watts.
(1973). Skates. New York: Watts.

Kent, Jack. (1975). The egg book. New York: Macmillian.

Knobler, Susan. (1974). The tadpole and the frog. New York: Harvey House.

Krahn, Fernando. (1981). Alex Pumperknickle. New York; Atlantic, Little.
(1974). April fools. New York: Dutton.
(1981). Arthur's adventure in the abandoned house New York: Dutton.
(1978). The biggest Christmas tree on earth. New York: Little Brown.
(1978). Catch that cat. New York: Dutton.
(1970). A flying saucer full of spaghetti. New York: Dutton.
(1977). A funny friend from heaven. New York: Lippincott.
(1980). The great ape, the true story. New York: Penguin.
(1970). How Santa had a long and difficult journey delivering his presents. New York: Delacorte.
(1976). Journeys of Sebastian. New York: Delacorte.
(1976). Little love story. New York: Lippincott.
(1977). Mystery of the giant footprints. New York: Dutton.
(1976). Sebastian and the mushroom. New York: Delacorte.
(1974). The self-made snowman. New York: Lippincott.
(1974). Who has seen the scissors? New York: Dutton.

Leinke, Horst. (1971). Places and faces. New York: Scroll.

Lionni, Leo. (1983). When? New York: Pantheon.

Lister, Sonia. (1973). The attic witch. New York: Four Winds/Scholastic.
(1975). Lost. New York: Harcourt.

Lustig, Loretta. (1974). The pop-up book of trucks. New York: Random House.

McCully, Emily. (1985). First snow. New York: Harper & Row.
(1984). Picnic. New York: Harper & Row.

McGovern, Ann. (1964). Who has a secret? New York: Houghton-Mifflin.

McTrusty, Ron. (1974). Dandelion year. New York: Harvey.

Mari, Iela. (1969). The magic balloon. New York: Phillips.

Mari, Iela & Mari, Enzo. (1970). The apple and the moth. New York: Pantheon.
(1970). The chicken and the egg. New York:Pantheon.

Mayer, Mercer. (1976). Ah-choo. New York: Dial.
(1967). A boy, a dog, and a frog. New York: Dial.
(1971). A boy, a dog, a frog, and a friend. New York: Dial.
(1973). Bubble, bubble. New York: Parents.
(1974). Frog goes to dinner. New York: Dial.
(1973). Frog on his own. New York: Dial.

(1969). Frog where are you. New York: Dial.
(1975). The great cat chase. New york: Four Winds/Scholastic.
(1976). Hiccup. New York: Dial
(1975). One frog too many. New york: Dial.
(1977). Oops. New York: Dial.
(1974). Two moral tales. New York: Four Winds/Scholastic.
(1974). Two more moral tales. New York: Four Winds/Scholastic

Mendoza, George. (1969). I must hurry for the sea is coming in. New York: Prentice-Hall.

(1970). Inspector. Garden City, NJ: Doubleday.

Meyer, Renate. (1972). Hide-and-seek. New York: Bradbury
(1969). Vicky. New York: Atheneum.

Mordillo, Guillermo. (1971). The damp and daffy doings of a daring pirate ship. Holland: Harlin Quist.

Moris, Terry. (1980). Lucky puppy! Lucky boy! New York: Knopf.

Olschewski, Alfred. (1969). Winterbird. New York: Houghton Mifflin.

Ormerod, Jan. (1982). Moonlight. New York: Lothrup, Lee, & Shepard.
(1981). Sunshine. New York: Lothrup, Lee, & Shepard.

Pierce, Robert. (1974). Look and laugh. New York: Golden.

Rampage, Corinne. (1975). The Joneses. New York: Lippincott.

Raynor, Dorka. (1973). This is my father and me. New York: Whitman.

Ringi, Kjell. (1968). The magic stick. New York: Harper & Row.
(1969). The winner. New York: Harper & Row.

Ross, Pat. (1974). Hi fly. New York: Crown.

Schick, Eleanor. (1969) Making friends. New York: Macmillian.

Schwenger, Ann. (1979). A dance for three. New York: Dial.

Sesame Street. (1974). Can you find what's missing? New York: Random House.

Shimin, Symeon. (1976). A special birthday. New York. McGraw-Hill.

Simmons, Ellie. (1968). Cat. New York: McKay.
(1967). Dog. New York: McKay.
(1970). Family. New York: McKay.

Spier, Peter. (1972). Fast-slow, high-low. Garden City, NJ: Doubleday.
(1971). Gobble, growl, grunt. Garden City, NJ: Doubleday.
(1977). Noah's ark. Garden City, NJ: Doubleday.
(1983). Peter Spier's Christmas. Garden City, NJ: Doubleday.

(1982). Peter Spier's rain. Garden City, NJ: Doubleday.

Steiner, Charlotte. (1961). I am Andy. New York: Knopf.

Sugano, Yoshikatsu. (1971). The kitten's adventure. New York: McGraw-Hill.

Sugita, Yutaka. (1973). My friend Little John. New York: McGraw-Hill.

Tafuri, Nancy. (1983). Early morning in the barn. New York: Greenwillow.
(1985). Rabbit's morning. New York: Greenwillow.

Tanaka, Hideyuki. (1983). The happy dog. New York: Atheneum.

Turk, Hanne. (1983). Goodnight Max. Boston: Neugebauer.
(1983). A lesson for Max: Boston: Neugebauer.
(1983). Merry Christmas Max. Boston: Neugebauer.
(1983). Max the art lover. Boston: Neugebauer.
(1983). Rainy day Max. Boston: Neugebauer.
(1983). Raking the leaves with Max. Boston: Neugebauer.

Turkle, Brinton. (1976). Deep in the forest. New York: Dutton.

Ueno, Noriko. (1973). Elephant buttons. New York: Harper & Row.

Ungerer, Tomi. (1964). One, two, three. New York: Harper & Row.
(1964). One, two, Where's my shoe? New York: Harper & Row.
(1962). Snail, where are you? New York: Harper & Row.

Vasiliu, Mircea. (1970). What's happening? New York: Day.

Von Hollander, Jurgen. (1974). Monkeys. New York: Hill.

Van Soelen, Philip. (1981). A cricket in the grass. New York: Scribner's.

Ward, Lynd. (1973). The silver pony. New York: Houghton Mifflin.

Warner, Bob. (1975). The elephant's visit. New York: Little.

Wegen, Ron. (1981). Balloon trip. New York: Clarion.

Wetherbee, Holden. (1979). The wonder ring. Garden City, NJ: Doubleday.

Wezel, Peter. (1964). The good bird. New York: Harper & Row.
(1967). The naughty bird. New York: Follett.

Wildsmith, Brian. (1970). Circus. New York: Watts.

Winter, Paula. (1976). The bear and the fly. New York: Crown.

Wondriska, William. (1963). A long piece of string. New York: Holt.

Young, Ed. (1983). Up a tree. New York: Harper & Row.

Using the MacIntosh and Laserwriter: A Case Study in Visual/Verbal Productivity

by

TILLMAN J. RAGAN, JOHN C. BELLAND
&
MARGARET A. SMITH

Introduction

The Macintosh computer and Apple Laserwriter[1] printer have been heralded as the best current technology for "desktop publishing." The power of the Macintosh computer lies, in part, in its bit-mapped approach to screen display and output, allowing the mixing of text and graphic images with complete flexibility. The marketing efforts for the Macintosh at Apple Computer have been primarily directed to businesses and colleges, and marketing of the now two-year old Laserwriter printer is primarily targeted at a business audience. Although marketing efforts at Apple are not focusing on them, the potentials for instructional materials development and for visual literacy activities of the Macintosh and Laserwriter technology are enormous. The purpose of this paper will be to discuss those potentials.

Creation of visual images by computer is the most recent landmark development in the creation of graphic images and is the subject of this paper. Although there are many tools, terms, and outlooks for computer graphics, including CAD (Computer Aided Design), we will focus on the use of one computer, the Macintosh, in combination with one printing device, the Apple Laserwriter, and varieties of software, such as MacPaint, MacDraw, and MacDraft. And our primary focus will be on one use among the many possible uses for that hardware and software: the creation of graphics in education and training. We will discuss uses of the Macintosh and Laserwriter in creation of instructional graphics by a service agency, and we will also discuss the uses of the same technology from a visual literacy standpoint--as tools for enhancing abilities in communication, problem solving, and appreciation.

Evolution in Graphics Production

With the exception of a few landmark developments, change comes gradually in the tools used to create graphic images, and changes are accepted begrudgingly by those who use the tools, graphic artists. Small sticks with fibers tied to their ends are still used by graphic artists. The artist dips the fibered end of the stick into a staining liquid and carefully, painstakingly smears the liquid onto a surface.

Photography was one landmark development in the creation of graphic images. Although photography is now well and thoroughly accepted as an indispensable tool for visual communication, there remain critics who would hold that for aesthetic purposes it is necessary to use either small sticks with fibers tied to their ends, or use tubes filled with a staining liquid, out of which the liquid can be made to flow through a smaller tube, or by blowing a mixture of air and a staining liquid onto a surface, or by rubbing a stick of graphite, carbon, or some other material which will make marks on an otherwise clean surface.

---

[1] Macintosh and Laserwriter are registered trademarks of Apple Computer Corporation.

There are, of course, many other means by which artists place and manipulate images. The tendency, however, has been to employ simple, even primitive, technologies in the creative process.

With characteristic conservatism, graphic artists have been by no means unanimous in acceptance of computer technology in their work. In fact, with the exception of the "innovators," commercial artists have waited until a competitive advantage was well demonstrated (typically by a competitor) before adopting the use of a computer for imaging.

There are some good and understandable reasons for the artist's technological conservatism. Computer imaging is a very different process with very different results from conventional imaging processes. Artists frequently complain that the level of detail is insuffiencent or a fluidity of line is not possible in computer images, particularly when relatively inexpensive computers or printers are used. On the other hand, computer image making can yield results with precision, accuracy, and repeatability, as well as particular and unique effects. Characterizing the overall benefit of using computer technology for imaging is, in fact, a difficult task because the product may be inferior to that possible with conventional means when evaluated against certain specific criteria, such as resolution. But with regard to other factors, such as alignment, the result is better than conventional imaging.

But as different as the resulting images may be between computer and "traditional" image making, the real benefits from computer imaging frequently come from the process side of things rather than the product side. In other words, the computer's help is sometimes most strikingly seen in the creation of the image, not in any qualities of the image itself.

When we look at a computer-generated image, we don't necessarily know what skills (or lack of skills) were possessed by the person who worked with the computer to generate the image. In the case of computer-generated images, certain sorts of visuals would not be possible without the computer's help. In some instances this is because the complexity or other demands of creating the image is beyond the skill of the individual to create otherwise, and in other instances it has to do with speed--the individual might not have time available or the patience necessary to create the image(s) without computer assistance. Therefore, the benefits of using computer technology for imaging are not always obvious or visible in viewing the images themselves, but may be benefits inherent in the relationship between the image, the person who created the image, and the process used in creating the image.

Other reservations to use of computers have been expressed by graphic artists. For example, a device such as a mouse, graphics tablet, or light pen, is not as convenient to use or lacks the feel of a pen or pencil on paper. Some of these reservations may be correctly attributed to ordinary human-nature resistance to change--"if it's different from what I'm used to, it's not as good." But not all of the reservations can be so easily written off. For the experienced, skillfull artist, helpful feedback is lost when the tactile pull of a paper's tooth against a manipulated instrument is absent. There is no doubt that there are improvements remaining for hardware and peripheral manufacturers to develop in the human engineering of user interfaces. Yet there remain real and significant advantages, with current and inexpensive equipment, for the generation of graphics.

To understand and appreciate the factors which are advantages of the computer in graphics generation requires that, one way or another, you have first hand acquaintance with the processes of computer image generation in question. For example, it is instructive to be given (or see another person given) a visual creation task which you know you "can't do." Then, with assistance from the computer, you do it. You can see what you (with the computer's help) were able to accomplish. Other people looking at what you created might imagine that you are much more skillful than you are and say to themselves, in essence, "no big deal," and at the same time notice the little dots which make up the lines and say, "gee, if you would have done that with pen and ink your lines would have been smoother." The fact that you were not even close to being able to make that visual in the first place without the computer is not as obvious as the little dots are. When the little dots are so small that they are virtually invisible, as they can be in Laserwriter output, the novice is doubly gratified at the result.

Similarly, the benefits of efficiency in computer assistance in image generation are not apparent from observation of the product. You may have created a perfectly ordinary-looking (but extremely useful) flow chart in one tenth the amount of time using a computer than it would have taken to produce an equivalent without a computer's help, but it would be very difficult to know that by looking at the flow chart which you created.

As computer and printer technology improves and as one can purchase more computing and printing power for less money, as is constantly happening, the limitations or drawbacks of products will be less and less. The 300 dot per inch resolution of the Apple Laserwriter printer came at a price of $7,000 only a year ago. Now the printer can be purchased for one half that amount. The Allied (Mergenthaler) Model 100 or Model 300 Linotronic computer typsetting machines with resolutions of 1000 and 2000 dots per inch now cost $10,000 and $50,000 respectively. It will not be too long, perhaps, when 2000 dot per inch resolution is available on a machine which schools and even homes may be able to afford.

What Do People Use to Create Images?

What you use depends on what field you are in. In a University, for example, the people in the Architecture Department will make a lot of use of airbrush and felt tip pens, in addition to computer uses. On the other hand, in the Art Department, paint and brushes predominate, some airbrush use, and not very many people using a computer (although there may be some, these days). Leaving academe and looking at the advertising industry, we find that those who work with print media employ a lot of photography and hand-done line art, whereas their counterparts who work with television adverstising make an enormous use of computer technology in generation and manipulation of video images. In instructional graphics, the primary tools for creation of original art have been technical pens and india ink, use of templates and lettering guides, transfer lettering, and graphic tape.

What is Obsolete Now?

If the computer technology is superior in some ways to exisiting technologies, what has been obsolesced? For simplicity's sake, we will stick to the application of instructional graphics production. It seems to us that the following items are now virtually obsolete:

Lettering machines (Kroy, Letter-on, Sign Press)
Lettering templates (Leroy, Wrico, Koh-i-Noor, stencils)
Hand lettering with Speedball pens

By the same token, it seems to us that the following items are still as useful and important as ever, even when there is a full computer graphics capability available:

Photography
Screen Printing
Office Copiers
Offset duplication

Note that these technologies are ones which only recently displaced drawing methods as a primary means to generate images. Rather than draw something, it has become commonplace to photograph it or copy someone else's rendering with an office copier, then cut and paste. And now, with computers, we see "electronic cut and paste," using, rather than "clip art," diskettes full of computer graphic images called "click art," so termed because to select a given image to cut and paste (electronically), you point to it on the screen and press or click a button.

Before we move on, we feel it important to note that we believe that drawing with a pen or pencil, using paint and brushes, and using felt tip pens are not yet obsolete. Although the role and importance of original art has been changed fundamentally by common use of duplication technologies, that role has not dimminished to insignificance. What the role of pen or pencil drawing will be in the future remains to be seen. As we will discuss later, we see an important role for the computer in helping novices to learn to create and use images in communication, in addition to the computer's potentials for increasing productivity of specialists.

Two Attempts at Using Computers in Graphic Services

In the Spring of 1985, the Instructional Services Center at the University of Oklahoma, purchased an Apple Laserwriter printer to be used with the two Macintosh computers which had recently been purchased for use in graphics production. The Macintoshes and Laserwriter were the second round of effort to increase the efficiency and productivity of the graphics production staff through use of computers.

The first attempt, begun in 1982, involved an Apple II computer with a Houston Instruments Digitizer Pad and a Houston Instruments Plotter. This equipment, although capable of sophisticated work, was never used to make a single instructional graphic product, even given three years of trying by the same people who were later to make immediate and productive use of a different computer graphics system. Why did the first system fail? Four reasons seem in retrospect the most important:

1. Multiple vendors
2. Equipment complexity
3. Equipment incompatibility
4. Software

Perhaps the best description of the problems of the first system is that provided by the graphic arts director herself:

> I was looking for a simple computerized way to do graphics. I saw a demonstration of what I thought was the answer to my problem--a basic

computer, a good plotter, and a digitizer tablet. But instead of being the answer it was the beginning of my problems.

The computer which we purchased was the newest model, an Apple IIe, not the one demonstrated, an Apple II+[2]. It turned out that the computer store from which the computer was purchased was not an authorized dealer and did not know enough about the Apple II computer to realize that the software would not work on the newer IIe model. Also, the software which drove the plotter and digitizer had been developed by a User's Group (a computer club) which was going to develop an upgrade to be compatible with the new computer--the Apple IIe. However, between the time I called them requesting an upgrade and when they promised it would be out, the User's Group disbanded.

I could not seem to get any help at all from the store where the equipment was purchased, but they told me to call the manufacturer of the plotter. A Houston Instruments representative came to the office and got the plotter to perform a self-test (something I could have done myself). The results of the self-test indicated that there was nothing wrong, internally, with the plotter itself.

To this day I do not know if the problem was with equipment (such as interface boards between the computer and the graphics devices), software, or our use of it. Regardless, we were never able to get information generated by the digitizer to be transferred to plotter. We sold the machines at auction recently.

The Second System

In constrast to the organization's first experience, the Macintosh and Laserwriter were in routine use for production of graphic materials within three weeks of the Laserwriter's purchase. In three weeks, the graphic artists--undergraduate university student workers--had taught themselves to use the equipment. They voluntarily chose to use it rather than their customary techniques. When asked about their reactions to the new equipment, the artists said that they liked it and when asked why, they said that it was easier to develop materials with the computer than without. In one and a half years, the Macintosh and Laserwriter have been used in the generation of over 4,000 instructional graphics.

Because the Macintosh worked for the organization and the Apple II system did not, one might be tempted to say that the Macintosh works and the Apple II system does not work and that it is as simple as that. That is not the case. There are, no doubt, many people making productive use of Apple II and Houston Instruments equipment in graphics production. There are also, we suspect, instances of people getting stuck in a rut with their Macintoshes and Laserwriters. However, from our experience, we believe that there have been real advances in the last two years, as reflected by the Macintosh and Laserwriter.

Before we discuss those advances, the role of the equipment vendor should be addressed. The importance of the contribution that the helpful and competent dealer has made cannot be overestimated. Dealer personnel helped with some disk drive problems early on, they assisted in upgrades of software, they answered questions and gave mini-seminars on aspects of software and system use which were causing confusion, helped with replacement of defective toner cartridges for for printer, and regularly called to ask if there were any problems. The dealer in question, we would like to add, is Computers/Associates, 2301 West Main, Norman, OK 73069.

---

[2] Apple II, Apple II+, and Apple IIe are registered trademarks of Apple Computer.

Other factors in the success of the Macintosh and Laserwriter are more germane to the topic of this paper: qualities of the system itself. At the outset we should note that the computer and printer are an integrated system. Rather than an assemblage of peripherals connected to the computer, the Macintosh and Laserwriter work together smoothly with a minimum of fuss and bother. The system is simple enough to learn to use in a short period of time. The ability to quickly get useful work out of the system is, like dealer support, a factor of critical importance.

Also, the system possesses at least a minimum capability with regard to image quality. The 300 dots per inch (dpi) resolution is enough for most instructional graphics. It does not look clunky, dotty, or "computerish." Part of how the type and graphic images look to a viewer is subjective and is based on expectations. If the viewer is looking at something known to be locally produced, such as an instructional graphic, a class handout, an internal bulletin or newsletter, the viewer is typically quite impressed by the quality of the image. If one is expecting typeset quality, such as in a magazine or book, the printing done by the Laserwriter may look somewhat crude.

But regardless of how high the expectation of quality is, the output of a Macintosh and Laserwrite printer can match it because the output may be fed directly into true computer typesetting machines: the Allied Model 100 and Model 300. For practially any application, the 1000 dpi of an Allied 100 will be sufficient. But for the highest possible quality, the Model 300 may be used which yields a resolution of 2,200 dpi. Although these machines are quite expensive, there are a number of services which will print documents stored on customer-supplied disks, at prices of from approximately $5.00 to $10.00 per page.

Matching Tool and Tool User

In order to offer some explanations for the way in which the system of the Macintosh Computer and the Laserwriter facilitated the development of effective instructional graphics, one needs to examine the general relationship between tool and tool user, analyze the context in which the tool is used, and identify some of the questions which would be interesting to pursue as such systems come into more general use.

In The Inverse Tool Principle, Belland (1985) suggested that tools should complement their users. In other words, a naive user needs a sophisticated tool in order to complement his/her skills and knowledge. The sophisticated user has considerably greater skills and knowledge so s/he really can use very simple tools well.

Tools are most often made available to people on the basis of economics. Naive people are provided with crude, incipid, cheap tools while sophisticated persons are provided (or provide themselves) with precision, powerful, expensive ones. Sometimes there may be justification for the economic principle since certain powerful tools can harm both the tool user and others. Society must therefore restrict access to things like LASER cutting tools or broadcast telecommunications. Other powerful tools may have the potential for harm or good, but the harm or good derives from the intent of the user rather than from skill or the lack thereof. Included in this latter category are the tools which enable the storage and distribution of images, both iconic and diagrammatic.

Image generation is the focus of this document. It is our position that many persons have tended to use words rather than pictures not only because of the emphasis that written language is given in education and society but also because powerful tools for producing images were not available to very many people. While at a fundamental level a piece of paper and a pencil can be the means to draft words or sketch pictures, most people are much more comfortable drafting words. With words, it really doesn't matter if one's handwriting is atrocious or if s/he has to cross out or rearrange the words because it is a simple matter to have specialized personnel transfer the words to word processor or type on paper. When one sketches, the fine-motor skill of manipulating the pencil and eraser, and the considerable time required to translate the sketch into a presentable rendering is much more difficult. Even when artist help is available, such help is much more scarce and expensive than is secretarial help.

With the advent of computer plotters and dot-matrix printers, it has been possible for people to develop images on the computer. Sophisticated graphics artists were able to access highly sophisticated systems for generating, manipulating and rendering their work. Students, teachers and the public if they had access at all had to use low-power computers, awkward sketching devices, crude "paint" programs which provided few options in image manipulation, and low-resolution, slow printers and plotters. These tools discouraged exploration of communication through images and reduced people to the use of oversimplified, cliched images such as those facilitated by packages like Print Shop™. People who had been trained to use more traditional graphics tools continued to use them when time permitted.

The Macintosh computer was developed by Apple to enable naive persons to use a computer in a way parallel to the way they manipulate paper on a desk. The designers made it possible to avoid the use of keyboard commands and computer jargon. They also made image generation and manipulation as available as word processing by supplying both write and paint software with each machine. They also provided the means to integrate pictures and text easily. Even though sketching with a mouse is a lot like drawing with a block of wood, the software enabling manipulation of the image after it was sketched apparently freed many people to begin to use pictures and diagrams in their communication. Other software firms have begun to market a panoply of software packages which extend the power and flexibility of the Macintosh system into publication layout and design and into three-dimensional imaging and animation.

Until the Laserwriter was marketed, however, the images and text generated through the system still looked "computerish." They did not have the professional polish which would make a designer proud to distribute them. The Laserwriter required no special knowledge or skill to connect or operate and yields images limited only by the designer's imagination or communication skill.

Tools and Learning

Some people might argue that if the naive are given sophisticated tools those tools will inhibit learning. In other words, by allowing a learner access to a Macintosh and Laserwriter in an introductory experience with graphics, that learner will never become a "real" graphics communicator. We believe that there is no evidence to support such a position. We acknowledge that we are only beginning to investigate the opposite view, but experience in mathematics education with calculators and computers would seem to support our view. Suydam (1982) has synthesized the calculator research and has concluded that the use of a calculator facilitates mental arithmetic, estimating and mathematical concept development. We suggest that the quality and intensity of use of the Macintosh/Laserwriter tools by the students we have observed is good first evidence for the instructional effectiveness of these tools. Observation of these students over the next several years will allow us to examine whether growth continues.

- Will these students become connoisseurs of good visual design--balance, composition, emphasis, novelty, symbolism, style, genre, and so on?

- Will they be able to translate this sophistication into images which communicate powerfully?

- Will they use images in ways which will help children and adults understand more about the way images can be interpreted?

- Will they use images only to illustrate text or will text and images be truly symbiotic?

- Will they be able to discover new pictorial codes and structures?

Apple Classroom of Tomorrow

Opportunities for observing the effects of Macintosh/Laserwriter systems will be increasing rapidly. The present report is concerned with the observation of university undergraduates. However, in September, 1986, the Columbus, Ohio Public School and Apple Computer began a project called the Apple Classroom of Tomorrow (ACOT). Each student in one class of ninth grade students in a racially balanced inner-city school has been provided with Macintosh Plus computer system networked to each other student's and to a Laserwriter in the classroom they use for all their subjects. In addition, each student had been provided a complete MacPlus system with Imagewriter II printer to keep at home.

A participant/observer is documenting a wide variety of impacts in the ACOT environment, but has already commented on the extensive development of images by the students to communicate their ideas (Bohren, 1986). Since this project does not seek to emphasize any particular computer application, but rather is trying to evaluate how teachers and students choose to use a computer system to facilitate learning and the communication of learning, it will be interesting to evaluate what happens to visualization and visual communication.

References

Belland, J. C. (1985). The Inverse Tool Principle. Educational Communication and Technology Journal, 33, 1, 51-57.

Bohren, J. (1986). Personal communication.

Suydam, M. N. (1982). The use of calculators in pre-college education. Fifth annual state of the art review, Columbus, Ohio, Calculator Information Center

Effective Communication and Better Access:
Improving the Design of Library Signs

by

ANDREW R.J. YEAMAN

Libraries present the image of information-rich environments but they are usually so visually cluttered that information is difficult to access. Entrances have signs for library hours, various prohibitions and sometimes a crowded directory. Inside there are labelled stacks of items--each one bearing a call number--and more signs, inconsistent in display format and intent. The effect is not so much help but hindrance through information overload. People need to spend their time turning the right information into knowledge, not looking for it. To encourage improvement in this specific environment, the focus of this paper is on signs, signposting and wayfinding in libraries--including media centers.

Towards systematically developing more effective signs in libraries these questions need not so much to be answered as understood:

- Why do people ask where to return books when the label *BOOK RETURN* is in letters eight inches high?
- What are the three basic functions of library signs?
- When is a sign legible?
- What is good signposting and what difference does it make?
- Why are many library-media centers cluttered with signs that have accreted over time--despite Mallery & DeVore's 1982 guidelines?
- What should be contained in the policy and procedures for a *sign system*?

This paper addresses these questions by focussing on three areas: the function and content of library signs, display techniques and the systematic approach. Creating graphics with computers will be briefly introduced as a useful technique for locally producing signs. After reading this paper you should be able to:

- Identify the functions of library signs.
- Identify appropriate sign display techniques.
- Evaluate wayfinding needs in libraries and media centers in a systematic fashion.
- Use this these skills to improve the relationship between people and their information environment.

Function and content

This taxonomy of library-media signing functions came out of observation of many libraries and media centers and how people behave in them. An underlying assumption is that each sign is intended to answer a mental question. The investigation looked at what people wanted to do and how signs helped them achieve those goals. Qualitative analysis of signs and behaviors provided three general categories: direction, location and information.

Direction

These signs answer the question, *Which way is it?* They indicate the way to a particular place such as: *MICROFILMS ARE TO THE LEFT.* This is an ambiguous example as left could be from the point of view or either the reader or the sign. An arrow would be a helpful icon in this instance. However, even arrows can be ambiguous. Vertically pointing up or down arrows lead to walking past the stairs down long aisles or searching for nonexistent stairs.

Location

These signs answer the question, *Is this it?* They indicate this is what you have been looking for, a landmark or, at worst, this is not what you are looking for--such as: *FICTION H - Z.* The utility of stack labels requires scrutiny since the books on the shelves already bear prominent call numbers. One of the most frequently asked questions at the *REFERENCE DESK*--marked in letters six inches high--is the location of the *RESTROOMS*--correspondingly marked in letters one inch high. In one education library there is a block of red file cabinets in the center of the floor. On each cabinet is a capital letter in black, a foot high. This location sign spells out *VERTICAL FILE*---on the side, away from the entrance and the library desks. *FIRE EXIT--NO ADMITTANCE* might lead to the Phantom of the Library but here leads directly into the next category.

Information

These signs answer the questions, *What is it? What should I do with it?* They answer concerns about *process* and may *define* or *describe* options.

Information--definition signs usually contain lists. As opposed to a location sign saying here it is, options are given. The choices might be types of stored information such as a list headed *READER'S GUIDE PERIODICALS IN THE LIBRARY* or a floor directory showing locations in a building. This category includes maps because relationships are defined. Often library maps are flawed by failing to indicate *You are here*, by being misaligned with the direction the reader is facing and by being located so that none of the landmarks can be seen while reading the map.

Information--description signs describe operations in prescriptive fashion. These signs could be regulatory or instructional. For example, a *regulatory* sign forbids--*NO FOOD OR DRINK IN THE LIBRARY* and an *instructional* sign explains how to check out a book. Perhaps a descriptive information sign could be both regulatory and instructional such as *WE EXCEPT SUGGESTIONS.*

Display techniques

Libraries are social environments and function in that context despite inadequate signs that are sometimes best laughed at or ignored. The mere existence of signs conveys a positive intent and may encourage people to ask for clarification in person. However, there is still no need for the problems that poor signing creates--especially wasted time. The technique of display is vital in this as signs convey their messages as text.

Three technical terms related to reading need to be defined to understand better the reading of signs. *Legibility* refers to the degree of ease and efficiency with which a text may be read. Letter size, line length and interline spacing are the major legibility variables associated with lower comprehension, slower reading speed and inefficient eye movements. *Visibility* refers to how distinguishable individual alphanumerics are from each other. This is a matter of resolution or image quality as a function of contrast and is a measure of letter or number identification, not reading. *Readability* refers specifically to the difficulty level or comprehensibility of text content and not to display. For example, a text may be rated readable at a certain age or grade level based on the number of syllables per word and words per sentence. Using legibility, visibility and readability synonymously results in the confusion of three distinct pyschological constructs. The separation of these constructs should be maintained.

Shannon's information theory of communication is useful in looking at the legibility and visibility of display techniques for signs. The model for information theory is the telephone call. A message is sent from a sender to a receiver through a channel, the rate and capacity being measured in bits per message or per second. In the ideal situation noise is eliminated from telephone lines or any other communication medium. Noise may also be reduced when seeking to communicate with library signs.

Reading distance can contribute noise for text legibility and Woodson (1981, p. 494) has a prescriptive chart for determining appropriate letter sizes. Use mixed upper and lower case letters for running text. Use all capitals for labels only.

On the basis of visibility, all capitals are better distinguished from each other in labels read from a distance. The uppercase alphabet represents 26 bits of information but mixed uppers and lowers represents 52 bits of information. To maintain visibility all lettering should be mechanically produced. Signs should not be made with hand lettering--not even calligraphy.

B8RAS5 Helvetica (sans-serif) B8RAS5 Times (serif)

B8RAS5 Venice *B8RAS5* Monaco italic

B8RAS5 Zapf Chancery B8RAS5 Monaco outline

B8RAS5 Chicago bold **B8RAS5** Chicago bold shadow

Compare these characters: B8RAS5 to assess the visibility of a font. Can any of those six characters be confused? All letters should be easily distinguishable from each other. A gothic or sans-serif font is recommended such as Helvetica. Avoid script and old english. Avoid modulations such as outline and italic.

Design choices have to be made for lettering and background. There should be maximum contrast to enable both legibility and visibility. Black characters on a white background is the very best for reading in both the laboratory and the field. Both lettering and background should be matt to avoid glare. Signs should not be laminated or placed behind glass as this also causes glare and reduces contrast. Clear acrylic hanging signs may have aesthetic appeal but they function poorly due to glare and the lack of background reduces contrast.

Many less legible and less visible displays can still be read such as white letters on black or on a sufficiently dark colored background. However color should be used judiciously as it adds one more element to the information transfer process. Color is often used to indicate coding--as in highway signs where the standardized shapes and colors of the signs convey special meanings to trained drivers. Such an elaborate color and sign shape system is clearly inappropriate for a library.

Signs need to be designed for their location. The lighting level should be adequate. The viewing angle should be anticipated--from the side or from below. Viewing angle is lower for children and people in wheelchairs. Not only does the location of a sign need to be sensible but so does the height. Tactile signs require similar consideration for the convenience of the blind and the partially sighted.

Towards a sign system

Librarians are paying more attention to signs and how they function in the information environment. Kupersmith (1980) looks at this as an extension of bibliographic instruction and his column *The graphic approach* regularly appears in *Research Strategies*. Another example of the increasing interest in signmaking in the last two years is the widespread adoption of the microcomputer program *The Print Shop* for impromptu library signs, despite its limitations.

This assessment checklist is a good starting place for taking inventory of signs in place and provides some guidance for creating new signs:

- Describe the sign: wording, icons (arrows, etc.), location.
- What is the sign for? State the purpose as a behavioral objective.
- What type of sign is it? Apply the taxonomy. Combinations?
- Who is it for? First time visitors or...?
- Visibility?
- Legibility?
- Aesthetics?
- Does the sign function at an acceptable level?
- Evaluation techniques--qualitative and quantitative.
- Signs for the handicapped.

These nonspecialist tools will provide lettering for inhouse sign production at two levels:

Level One	Software:	*The Print Shop* & *Print Shop Graphics Library* by Broderbund.
	Hardware:	Apple IIe microcomputer & Imagewriter printer.
Level Two	Software:	*MacWrite, MacPaint & MacDraw* by Apple. *Word, Excel & Chart* by Microsoft. *PageMaker* by Aldus.
	Hardware:	Apple Macintosh Plus microcomputer & LaserWriter Plus printer.

Conclusion

As a recommendation, one professional should be appointed to periodically examine and maintain the facility's signs, to initiate any new signs and to evaluate the effectiveness of signs in helping people find their way. In a large organization a committee of department heads or their delegates may need to be appointed. A policy statement on signs should be issued to show support for the library's philosophy. Procedures need to be clearly laid out to ensure uniformity and conformity to sign conventions. Effective signs are also a part of public relations. While cost is a factor, this has to be assessed in terms of providing information access for people.

References and suggested reading

Easterby, R., & Zwaga, H. (1984). *Information design: The design and evaluation of signs and printed material.* New York: John Wiley.

Kupersmith, J. (1980). Informational graphics and sign systems as library instructional media. *Drexel Library Quarterly, 16,* 54-68.

Levine, M. (1982). You-are-here-maps, psychological considerations. *Environment and behavior, 14,* 221-237.

Mallery, M. S., & DeVore, R. E. (1982). *A sign system for libraries.* Chicago: American Library Association.

Woodson, W. E. (1981). *Human factors design handbook: Information and guidelines for the design of systems, facilities, equipment and products for human use.* New York: McGraw-Hill, 485-505.

Visual Literacy Enhancement Through Library Programs

by

RHONDA S. ROBINSON

Library. Learning Center. Resource Center. Media Center. Library.

These words are used interchangeably by many when referring to a special place and program in their schools. Regardless of its title, the center in any building should be more than a reference site or a reading room. Many library programs build reading skills, develop computer literacy, or enhance research and writing abilities. This paper recommends the inclusion of visual literacy development as another essential library program. Visual literacy is defined, and library materials and programs which could enhance visual skills are recommended and discussed.

Visual Literacy - Defined

Literacy is certainly a familiar concept, and many find the term visual literacy confusing, since for most of us it takes vision to read anything. Visual literacy has been coined as a simple expression of some fairly complicated media appreciation or film criticism concepts. Basically, visual literacy is: the ability to process the elements of and to interpret visual messages; the ability to understand and appreciate the content and purpose of any image, as well as its structural and aesthetic composition. A visually literate person can perceive, understand, and interpret visual messages, and can actively analyze and evaluate the visual communications they observe. Visual literacy involves the interpretation of images, movement, design, color, and pattern in media messages of many kinds, from company symbols and street signs to television commercials and MTV.

In a taxonomy of picture perception and imagery developed by Levie in 1984, many of the discreet skills involved in the development of visual literacy were listed. These included picture perception, visual cue interpretation, memory for pictures, concept learning, learning from prose, the affective response from pictures, media design variables, learner variables, and mental imagery (Levie, 1984). This taxonomy included an excellent bibliography for references in each area which would direct a librarian, teacher, or student to further reading in visual literacy.

Film study, television viewing skills programs, and even computer literacy programs are all a part of the enhancement of visual skills or "visual literacy". One of the main skills in visual literacy is the understanding of the structural elements of media such as film or television. Elements include composition, lighting, color, movement, sound and editing. These elements work together to influence us, to make us react (buy, cry, laugh). An awareness of these elements enhances our appreciation of the media we view. In developing our visual literacy, we enhance our appreciation and our critical analysis of media messages. We then enjoy certain films more, and we become less passive as viewers, developing more resistance to biased or persuasive messages such as advertisements. So, if we want to be less susceptible to ads appeals, visual literacy development may be the place to start!

Media has become an accepted area of study for schools, and media study and criticism have an established place in many high schools, colleges, and adult education programs. How can libraries, those centers of verbal resources, help us develop our visual literacy?

A public or school library can develop collections and many programs which could help adults or students develop visual skills. Since these visual literacy skills have such relevance to language skills, the library should have no trouble justifying film or video programs as a part of their services. The following suggestions may already be a part of library services that could be expanded to include visual literacy development. These ideas could be developed for audiences in a wide age range, so most libraries and teachers could adapt them for their own audience (and budget!)

Materials

The library reference collection should include some of the materials dealing with the concept of visual literacy. (See resource and reference lists) Some materials such as the Journal of Visual and Verbal Languaging and others can be ordered from the International Visual Literacy Association, a varied group of artists, teachers, filmmakers, television producers, and scholars involved with this concept. Also, the film and television reference materials should include books detailing critical viewing skills, television and film production, and how-they-made-it film books like The Making of 2001. Many collections include "novelizations" of films which motivate reading and often lead to further questions about the filmmaking process.

A reference list for those interested in visual literacy development could be included with other visual arts materials such as graphic design, photography, film history, film appreciation, perception and communication theory, mass communications, advertising, and television. And finally, multi-media kits and materials for curriculum development are available to help promote language/literacy enhancement in various courses (see resources, reference lists).

Hardware

Most libraries are really media centers, so the hardware needed to enhance visual literacy is already available. Microcomputers, film projectors (16mm and super 8mm), slide and filmstrip projectors, and video cassette players are all helpful to any program in visual literacy. The production of film and/or television is an active approach to visual literacy learning. Libraries with super 8mm cameras, small format video cameras and recorders, and even "instant" or "snapshot" cameras can develop active visual literacy programs built upon production skills. The 8mm format video/film camera-recorders are now be available, and may become popular for their light weight and portability, but 1/2" VCR equipment remains more compatible and practical for most facilities. Small children enjoy creating "hand drawn" cartoons on clear 16mm film (available for purchase or produced by bleaching discarded films).

In addition, many public and school libraries have become the community site for a cable television studio, a benefit of the community's contract with a cable company. If this arrangement becomes possible, consider the productive use of such a facility. Library and other community programs could be broadcast, reaching a much larger population. School and community groups could be responsible for a large percentage of the broadcast time, and members of those groups, from girl scouts to Jaycees to YMCA instructors would develop visual skills while producing broadcast materials. A studio is an enormous responsibility but could provide a tremendous opportunity to both the library staff and the community.

Software

Library collections of films, videotapes, filmstrips, and slide-tapes are often extensive, and include access to larger county or state collections as well. Consider visual literacy development as you add to or reorganize your collection. Visual literacy software on the resource list includes educational films and other media which explain visual literacy or help develop production skills in the elements of visual literacy, and short films which are excellent discussion starters for the enhancement of visual skills. These include animated films, narrative films, documentary films, even collections of television commercials, and may already be in your collections.

Additionally, narrative commercial films, including the old classics are considered important for visual literacy study. With so many library collections adding videocassette materials, the many catalog lists available should provide much guidance in building a collection of classics for visual literacy enhancement, from Charlie Chaplin's silent short films or The Gold Rush (1925) to a newer adventure like Raiders of the Lost Ark.

The resources list which follows should provide some ideas for the development of collections, hardware, and software necessary to the development of visual literacy programs.

Programs

Filmmaking, video production, photography, even poster and display case creation can all enhance visual literacy. Whether involving clubs, classes, community group projects, or after school extracurricular activities, the development of production skills should be encouraged by library-sponsored programs. The elements of visual literacy such as composition, editing, or design can be taught to any age group. If the hardware is available, the cost can be minimal. Companies like Kodak or Polaroid sponsor film purchase/camera-giveaways that community groups or clubs can help organize, and videotape is reuseable.

Film appreciation and film history can easily be taught to groups using the various software sources available. Classic narrative films, short educational films, documentaries, and new films available on tape can be selected from film library sources and featured in visual literacy-viewing programs. Discussions can range from the level of simple understanding to the complexities of aesthetic appreciation and emotional impact. Using the reference materials listed as a guide, programs could be developed that feature a film or videotape and discussion, plus some writing or speaking activities.

The enhancement of visual literacy is not something radical or even that new. It is, however, an important aspect of learning and development for all of us. If library programs help enhance visual literacy, they will ultimately be encouraging all literacy. Media literacy helps prevent the "technophobia" which affects many of us. Developing visual literacy can enhance learning ability, reading habits, and even the further use of library facilities. All students and educators could benefit from improving their ability to "see", to perceive the world with heightened awareness.

Resources

The following non-print resources are suggested materials. All non-print resources have been annotated for convenience. It is recommended that users preview films prior to use in order to determine suitability.

Films / Visual Literacy Material

ANIMATION PIE (26 min., 1974, Filmwright Enterprises).

> A delightful film about an animation workshop for children. The film shows the kids at work making flipbooks, drawing on film, doing cut-out and clay animation and pixillation.

BASIC FILM TERMS: A VISUAL DICTIONARY (15 min., 1970, Pyramid)

> Presents 46 different terms associated with motion picture production. Coverage of each term is quick and precise with a good introduction to the mechanics and jargon of motion picture production. Follows a hypothetical film from the writing of the script through the final credits (and out-takes).

BASIC FILM TERMS: A VISUAL DICTIONARY (17 min., 1977, Pyramid)

A quick-moving, zany film in which several young people on a hillside demonstrate the many techniques of filmmaking (e.g., panning, tilting, tracking, taking various kinds of shots, etc.). A good way of introducing a whole range of filming possibilities to students.

BUY, BUY (20 min., 1973)

A wry examination of the nature of television commercials as seen by the admen and producers who make them. Admen voice strong opinions both justifying and condemning what they do.

CAMERA MAGIC: THE ART OF SPECIAL EFFECTS (15 min., 1973)

This fast-paced amusing movie should encourage children to be imaginative and ingenious in their own filmmaking. The tricks shown in the film are simple, and most can be executed with a Super-8 camera. Helpful notes accompany the film.

THE ELECTRONIC RAINBOW: TELEVISION (23 min., 1977, Pyramid Films)

Leonard Nimoy conducts us through the world of television, showing how television has developed, how it works and how it is used.

EYE OF THE BEHOLDER (b/w, 30 min., 1955)

Through the eye of the camera we see how people are judged and examine some of the possible errors which are made in our judgments. An oldie but goodie for use in a perception unit.

HANDY DANDY DO IT YOURSELF FILMMAKING (11 min., 1974)

Demonstrates how to shoot a live-action Super-8 film and how to check and use the various kinds of equipment needed, including sound recording.

LIFE TIMES NINE (15 min., 1974, Pyramid)

Anthology of nine top quality short films, each written by a student (youngest, 11; oldest, 16) who directed his own film using professional actors and film crew. Each filmette is a commercial for "life", selling the joys of living.

NATURE OF THE FILM MEDIUM (28 min., 1966, Paulist Productions)

Critic-writer Edwin Fisher and actress Ruth Hussey use scenes from famous movies ("Citizen Kane" and others) to explain how films communicate, and how camera techniques, symbols and film editing, etc., produce emotional effects and facilitate flexibility in the film medium. ("Film Appreciation Series")

SEEING THROUGH COMMERCIALS (A CHILDREN'S GUIDE TO ADVERTISING) (15 min., 1978, Vision Films)

An actor takes time out from making a cereal commercial to show kids how advertising is designed to fool them.

SHAPING NEWS FOR THE CONSUMER (17 min., 1975, BFA Educational Media)

Advantages and limitations of TV news are candidly revealed in the coverage of a local fire. Seeing the newsman read from teleprompter screen alters the image of that TV journalist.

SOOPERGOOP (13 min., 1976, Churchill Films)

An animated film revealing the process of promoting SOOPERGOOP, a new breakfast cereal. Shows how kids are influenced by an appeal to their desires to be big, smart, popular, strong and happy.

TELEVISIONLAND (12 min., 1971, Pyramid Films)

A witty, insightful look at television in the fifties and sixties, condensed and collated by Charles Braverman.

Films / Supplemental film or resource for discussion of visual elements, practice in visual skills

AMERICAN TIME CAPSULE (3 min., 1969, Pyramid)

Over 200 years of American history is shown in 1,300 individual scenes which flash before the eye.

BEGONE DULL CARE (9 min.)

This phantasmagoria was created by ignoring the confines of frame division and drawing fluid lines and brilliant colors on a length of film. As a three-movement composition--including ragtime, blues and boogie-woogie--is played by Oscar Peterson, the restless shapes and lines sparkle, converge, multiply and recede.

BERFUNKLE (10 min., 1964)

This animated film is the basis for launching a vigorous program for improvements of communications at any level.

THE BOLERO (26 min., 1973, Pyramid)

Winner of the 1974 Academy Award for live action short subject, produced by Allan Miller, Zubin Mehta and the Los Angeles Philharmonic Orchestra perform Ravel's original composition. Mehta's brief discussion of its concept and challenge leads to greater understanding of this musical masterpiece.

BOOGIE-DOODLE (4 min.)

Forms and colors "doodled" onto clear film by McLaren dance to the "boogie" music of jazz pianist Albert Ammons. Spots, blobs and wavy lines of brilliant color swing against a dazzling red background.

BRAVERMAN'S CONDENSED CREAM OF BEATLES (15 min., 1973, Pyramid)

This film highlights the success of the Beatles from their Liverpool days to the heights of their career.

CAROUSEL (7 min., 1967, Macmillan)

Imaginative film about the captive steeds of a merry-go-round, midway between the real and the imaginary, dealing with their wild plunge for freedom. Unusual effects of extraordinary color.

A CHAIRY TALE (b/w, 10 min., 1957)

McLaren presents a modern fable of a kitchen chair that refuses to let a young man sit upon it. The ensuing struggle, first a mastery and then for understanding, lends itself well for interpretation re: body language.

THE CRITIC (4 min., 1960, Learning Corporation of America)

This film by Mel Brooks is a spoof on the audience as well as the creators of today's cinema.

GIRAFFE (11 min., 1971, "Silent Safari Series")

A silent film which visually depicts the beauty and habits of the giraffe.

HEN HOP (4 min., 1944)

The economic designs perfected by McLaren for drawing directly on film create a sprightly new puzzle out of the classic egg-before-chicken, chicken-before-egg dilemma. As the egg/hen frolics to French-Canadian barn music, a surprise solution is introduced.

HOPPITY POP (3 min.)

Drawn frame-by-frame with cameraless animation, three decorative figures romp to the amiable steam whistles of a circus calliope.

AN OCCURENCE AT OWL CREEK BRIDGE (b/w, 27 min., University of S. California)

Dramatic adaption of Ambrose Bierce's famous civil war story, told in flashback of the hanging of a southern planter being executed for sabotage. Excellent use of sound and slow motion.

PAS DE DEUX (b/w, 14 min., 1967)

Norman McLaren's PAS DE DEUX is already a classic in innovative film artistry. Through optical printing and stroboscopic effects, McLaren takes a simple and beautiful PAS DE DEUX and enlarges it into a thrilling cinematic experience.

SHOPPING BAG LADY (21 min., 1976, Learning Corporation of America)

Experiences of a group of typical 14-year-old girls make them more sensitive to the needs of elderly people. ("Learning to be Human Series")

TO SEE OR NOT TO SEE (15 min.)

Czech film-artist Bretislav Pajar uses ingenious animation in this satiric little comedy to show how our psyche copes with our inner thoughts and fears. Since childhood, our hero in this film has been retreating from unpleasant realities. But when his anxieties break through, he tries a new remedy: a pair of "reducing" glasses that minimizes threatening things. He feels great--until everyone else gets the same prescription.

UP IS DOWN (6 min., 1969, Pyramid Films)

Hero in this animated film is a boy who walks on his hands instead of his feet. Useful for topics such as point of view and perception.

WHAT ON EARTH (9:35 min., 1966)

An animated film, it shows life on earth as one long unending conga-line of cars which, of course, Martian visitors judge to be true inhabitants of earth, while we seem to be parasites infesting the autos.

References

Agel, Jerome (1970). The Making of Kubrick's 2001, Signet, New York, New York.

Considine, David (January 1985). There's more to it than meets the eye: The role of the media specialist in the promotion of visual literacy. Paper presented at the Association of Educational communications and Technology Annual Convention, Anaheim, CA.

Levie, Howard (Fall 1984). Taxonomy of pictures and imagery. Journal of Visual and Verbal Languaging, 4, 2.

Robinson, Rhonda S. (1985). Production practices: Television elements and the creation of meaning. Creating Meaning. Ed. L. W. Miller, I.V.L.A.

Robinson, Rhonda S. (1984). Using television to teach visual literacy. *Visual Literacy - Enhancing Human Potential*. Ed. A. W. Walker, R. A. Braden, L. H. Dunker, I.V.L.A.

Robinson, Rhonda S. (Spring 1984). Learning to see: Developing visual literacy through film. *Top of the News*. *40*, 3.

Wagner, B. J. and Stunard, E. A. (1976). *Making and using inexpensive classroom media*. Learning Handbooks, Palo Alto, CA.

Many resources including print and non-print sources are listed in these cited articles. Some material previously published in 1984b citation, above.

An Interdisciplinary Approach for Students K-12 Using Visuals of All Kinds

by

LYN LACY

Pictures are fun and they are everywhere. During our waking hours, we constantly process visual images about our environment. Visuals are one way we learn about the past, one way we speculate about the future. Visuals have been historically placed beside words as elaboration for the reader. Or they have been created to stand alone, requiring that one "read" the picture itself. And by their composition, visuals can express many different things to different people.

Visualmakers are also everywhere. Photographers record for us the fleeting moment. Something as simple as a smile communicates pleasure and encouragement to others. Visual creations have been built by architectural geniuses and by geniuses of Madison Avenue. Creators of visuals use a wide variety of media, from computers to paintbrushes. Some visualmakers say that they see things differently. And once they're hooked, they can never go back. Images pop out at them, demanding their attention.

Interpretation of visuals has never been a clear cut exercise. For one thing, manipulation by the visualmakers has been around for a long time. And some of them like to play games with our vision. Also well-known is that sighted people do not always see the same things. Dyslexia and color blindness are but two of the physical limitations educators are just beginning to fully understand. Interpretation can also vary because of differences in experience, background, or viewpoint.

Television has become one common ground of experience for Americans, and much has been written about how our society has changed because of the time we spend watching TV. In fact, it is because of broadcast television that many people have become interested in the problems of interpreting visual information. American society has also changed and will continue to change because of computers. It is projected that up to 75% of the jobs for this generation of children will be computer-related, and some people are concerned that youngsters are not being equipped to adequately interpret images created using this technology.

As dramatically as society has changed, so also have visuals themselves changed, a striking example being the ability of the mass media to shrink space. The 1985 Live Aid concert was broadcast live to fifty countries around the world and has been called a celebration of technology in addition to a musical charity event. Many of us in 1969 witnessed on TV the magical moment as man walked on the moon. We had never never seen anything like it, and we accepted it without question as real. But when the Challenger lifted off and exploded in January 1986, we were alarmed that the reverse was true for many of our youngsters. Raised on special effects in the movies and on television, some of our younger children did not understand that this tragic event was real.

Another example is TV's Max Headroom, at first purported by his producers to be the first computer image as a late night talk show host. Max was soon revealed, however, to be a young actor in a molded mask whose performance is first filmed and them played back every thirteenth frame to achieve Max's comically jerky effect. In an age when technology imitates reality, we now have reality imitating technology.

Considering the changes in visuals that we have seen in our own lifetimes, what will the future hold? How can we be prepared to interpret new visual creations? Who of us will be visually literate?

Visual literacy is, like verbal literacy, a communication skill. It can be defined as the ability to identify, analyze, interpret, evaluate, and produce visual messages. A visually literate person has acquired skills in gathering information from such straightforward visual messages as another person's body language. Or from complicated visual images that are combinations of new technologies like video, computer, and enhanced photography. And visually literate persons can both mentally image and communicate to others by producing a visual message themselves.

Background

Visual images have often been taken for granted by sighted persons. But if, as some sociologists proclaim, technology now provides an alternative educational system in this country, then indeed it is time for teaching the reading and producing of visual information.

Minneapolis Public schools made a commitment to visual education in 1984, along with the Minnehaha Academy, Northeast Regional, and DeLaSalle non-public schools, when a Block Grant from the Minnesota Department of Education was received to investigate visual literacy. Directors of curriculum and media services met with the appointed project administrator to set priorities for the Block Grant Special Project.

Meetings were held with subject area curriculum consultants to determine what was already being done and what needed to be done. It was decided that the greatest needs were to establish goals and objectives for students and to compile information about visual media as well as strategies for fostering visual literacy. Much that had already been written by experts in the field was contracted for inclusion in the project. And a document was planned and designed for distribution to school administration and staffs.

The project is entitled "Visual Education" and is an interdisciplinary approach, rather than a separate curriculum. It is intended for students in kindergarten through twelfth grades, with varying levels of sophistication. And it explores visuals of all kinds, from body language to emerging technologies. The components of the project are four objectives in visual literacy, overview of eight distinct types of visual media, and six goals for students. Strategies were designed by teachers themselves and include student video production, critical television viewing, and thinking skills using technology.

Overviews

Types of visual media are given extensive attention in the overview sections. First and most basic is the live action type of visual message, such as body language and facial expressions -- the ability, whether intended or unintended, to communicate with our bodies. Sign languages, theater, dance, and sports are other ways we create live visual images ourselves.

Next is the object as a visual image. By manipulating objects, we often learn using all our senses and in this way we interpret a familiar or a foreign environment. Objects also help us interpret past environments or understand different cultures or societies.

Third is the print graphic visual that is primarily a communication medium and is mass produced. Such things as signs, posters, and billboards. Book illustrations that become increasing more sophisticated. Newspaper and magazines graphics. Cartoons and comic books.

Compared to that is the fourth, the visual fine arts, images that are originally created as one-of-a-kind, exhibiting personal expressiveness for its own sake rather than for the purpose of mass communication. In the fine arts, visuals can be broadly categorized as two-dimensional, such as painting or drawing. Or they are considered three-dimensional, such as sculpture and architecture.

Fifth is the visual image on film, whether a still photograph or a movie. Movies alone can be classified in over two dozen genres, from science fiction to the realistic to the animate film. Sixth is the videotaped image that we see on TV, which can be of a realistic mature or a Saturday morning cartoon or a commercial. Or closed circuit TV, cable, interactive video, and video recordings for homes and businesses.

Seventh is the computer-generated image which can also be a still visual or a moving one. Eighth is the hologram, an emerging technology using lasers to create an illusion of three dimensions on a flat surface.

As we speak, new technologies are being developed and refined that will change our approach to visual literacy, such as the x-ray image for works of art that reveal techniques of master painters never known before and the three-dimensional holographic x-ray that could revolutionize industry and the medical profession. Photocopy machines reproduce original works with increasing clarity and sensitivity. Interactive video now offers us phonovision, an opportunity to watch who we're talking to, and mainframe computers can transmit visuals on line from architect to construction engineer thousands of miles away. Such new visuals do not always fit neatly into our list of basic visual media. And the ways this list will change by the twenty-first century will undoubtedly demand new approaches to the concept of visual literacy.

Objectives

For now, our objectives in visual literacy take into account the content and the design of visual images as we know them, similar to verbal literacy which considers textual meaning and grammatical structure.

One content objective is to understand the main idea of a visual. Is the content promoting something? Or is it documentary or illustrative? A design objective would be to note structure of the composition. For instance, how are colors used to support the main idea? Rather than promotional, documentary, or illustrative, is the content of an image symbolic? Once again, in the design of the image, is color used a part of that symbolism? And last, is the content purely expressive? And perhaps the designer's use of color a personal preference?

BEST COPY AVAILABLE

A second objective is to appreciate use of details that contribute to the whole. Color can be seen to be one such detail that adds to the overall composition. We can use language from the world of fine art to discuss details in visual images. For example, note the lines -- horizontal, vertical, diagonal, circular -- that make up the composition. And the shapes and how they are arranged. What are the spaces in and around those shapes? Look for colors and where are they used. And see how light and dark areas are positioned for balance. Finally, are there any textures implied? Such analysis from fine arts helps us analyze details in other visuals such as computer-generated images.

To consider the whole as a matter of content, is the visual "story" complete in itself? And is the design of the whole composition "closed", meaning that the viewer's attention is concentrated within confines of the visual image? Or is the design "open", with an implication that there are areas to left and right -- and perhaps open to the background and even into the foreground where the viewers themselves are positioned? And does the content seem to be part of a larger "story"?

Along with understanding the main idea and use of details in a composition, a third objective is to identify the unique properties of whatever visual medium has been used. A visual image is two-dimensional, as exampled by a photograph, or three-dimensional, as the subject of a photograph would be in real life. A visual is also either still or moving and either live or recorded. A visual may be in color or black and white. It may also be silent or accompanied by sound. The comic book is a fun example of a graphic arts medium that attempts to break through its two-dimensional, silent, and still restrictions, with its speech balloons and sound words, its implied motion and depth.

The last objective in visual literacy is to distinguish between reality and unreality. We must step back a moment and define all recorded images -- no matter in what medium -- as unreal by their very nature as imitations of reality. Only live images can be truly real. An image of people would be real if we were standing next to them, but a photograph of them is one step removed from reality and is properly called realistic. Less realistic would be an advertisement, in which the people are staged and may not be at all who they pretend to be.

We enter the intriguing world of the totally unreal -- live or recorded -- when the subject is absolutely someone he is not, puts on a costume, appears on a set, reads from a script. And in visual just as in verbal contexts, unrealistic images at the far end of the spectrum can result in eloquent fantasy or dream sequences.

Fantastic images appear everywhere, and can we honestly say that we fully comprehend all the visual information received in today's world? How can a computer-generated image, for instance, be understood for what it is, when -- by design -- it is far removed from reality but in content, it may be a stunningly realistic re-enactment.

Strategies

What are strategies for teaching content and design of visuals? Rather than a separate curriculum, visual literacy can be taught whenever and wherever we use visuals if we take time to consider the visual as a thing unto itself. For whatever visual that is encountered, in whatever curricular area, and at whatever age for our students, we must approach visuals with strategies that encourage critical thinking.

First is identification: simply "What do you see?" Content questions like "Who, what, or where is the image?" "What are the colors? Shapes? Lines?" Design questions would be, "What is this type of visual called?" "Is the image two-dimensional or three-dimensional? Is it still or moving? Live or recorded? In color or black and white? Silent or with sound?"

Next is analysis: "How is the visual put together?" "What is a summary of the content?" "Have you ever seen another image like it?" "How are segments of the medium used?" "What and where are the most or least, largest or smallest, closest or farthest elements in the visual?"

To interpret a visual image, ask "Why is the visual as it is?" "What is the main idea?" What is the intent, the feeling, or the mood conveyed by the visualmaker? Is it promotional, documentary, illustrative, expressive?" "How is use of this medium different from use of another?"

Fourth is to offer an opportunity to evaluate by asking, "How successful is the visual?" "Does the content have validity?" In design, "Was use of the medium effective?" "What is your response?"

This last question can lead to production itself, in which visually literate persons are able to mentally image and create visual communications of their own. To encourage production, a question might be, "Do you see the same things that the visualmaker saw?" "What would you need to create another visual like this one?" Design questions would be, "Can you create a similar visual but using another medium?" "What are the steps you would follow?" "Does it communicate what was intended?"

Goals

We have been educating with visuals all along, and that is the best beginning. Stopping to consider design questions as well as content questions is the next step in visual education. And the payoff could be the most visually literate generation we have ever known, for our goals are high.

The first is that children will become more creative and critical thinkers, identifying patterns and connections, analyzing, interpreting, and evaluating what they see.

The second is that they will be visualmakers themselves, creating mental images and communicating visually to others.

Next is that they will be more perceptive individuals, recognizing and appreciating the aesthetics of visual images and image creation.

Fourth is that they will become more responsible citizens, understanding historical, social, and cultural differences in image creation and by so doing, will recognize such things as stereotyping and propaganda when they see it.

Fifth is that they will become more discriminating consumers, understanding the motives, methods, and emotional appeal of advertising visuals in a modern society.

And last is that they will become lifelong learners, with a positive attitude about learning how to learn about visual messages.

Conclusion

Our objectives and strategies help us reach these goals. By identifying content and design, students learn to recognize real, realistic, less than realistic, and totally unreal visual images. By analyzing how a visual is put together, they determine details that contribute to the whole composition. By interpreting why a visual is as it is, they understand the main idea. By evaluating and producing, they explore the unique properties of various visual media.

We have entered a technological age, and as society continues to change, so will it demand newer and better visual images. The world of tomorrow belongs to the children, and as they prepare themselves for life in the twenty-first century, we can only envy them their future.

Watch: Critical Viewing Guide for Children

by

RONALD E. SUTTON

My friend John Culkin said once that our children swim in media as fish swim in water. It supports, nurtures, influences and teaches them even though they are quite oblivious to its presence.

It is the thesis of this paper on critical viewing skills as it was of the media reform group Washington Association for Television and Children (**WATCH**), that children from pre-school to sixth grade need to learn to view television critically. For if they don't learn how to use the media, then the media will certainly use them.

But let the words of the introduction to the *Critical Viewing Guide*, written by my colleague Dr. John Doolittle, President of **WATCH**, speak to this issue.

> The impact of television on your home and your children cannot be denied nor should it be ignored. Much of a child's perception of the way people in the world live and act and even how a child perceives himself comes from what is seen on television. From Sesame Street to the nightly news, children of all ages are being constantly bombarded with data. They have at their finger tips more information than ever before.
>
> Attention span, listening skills, selection of toys and foods, as well as interpersonal relationships have all been affected by the many hours children spend in front of television (about 12,000 hours by age 18). It is the position of **WATCH** that children can be taught to critically view television and, therefore, make it a more productive learning experience.
>
> Television is a fact of life today. It will not go away. To forbid its use is unrealistic. What we hope children will learn from these lessons is to look, think, analyze, evaluate, and express what is seen on television... (*WATCH: Critical Viewing Guide*, p. i)

Without wanting to "preach" to the already committed, I wish every reader could watch a brief reel of selected material taken from the air in the afternoon hours in Washington, D.C. It would help you gain an impression of the programming available to children after school. This is what they must be prepared to handle.

Faced with such material made freely available to children, **WATCH** was founded in 1975 as a local, non-profit, media reform organization to ensure that children, especially pre-school and primary age, were served by local television stations. The small (seventy members was tops at its peak), volunteer, David-like group did legal battle with well-heeled, powerful Goliath-like television stations and networks. And with the aid of legal counsel from the Citizens Communications Center in D. C., the tiny band won some (a landmark case against Taft Broadcasting on the purchase of a UHF station, WDCA Ch. 20) and lost some (a petition to deny the licenses of the three network stations in D.C.: WUSA - TV 9 (CBS), WRC - TV 4 (NBC), and WJLA - TV 7 (ABC) for their lack of children's programming in the face of an FCC directive to provide it.

WATCH also worked in the areas of education and conversation speaking to local PTAs and at national conferences discussing the impact of television and the new communications technology on children. The members also testified on behalf of children before the Federal Communications Commission (FCC) and the United States Congress.

WATCH's membership included parents, primary grade educators, communication lawyers, professors and students. For a decade the group worked hard to raise the level of consciousness of the community toward children's television programming through workshops, newsletters, regular TV spots and other programs. The crown jewel of their work was published in 1985. It is the fifty page *WATCH: Critical Viewing Guide* written by Mary Ann Banta and Flora K. Creighton. It contains:

Four Lessons for Pre-School and Kindergarten:

1. How Television Makes Me Feel
2. Real vs. Make Believe
3. Masks and Monsters
4. Commercials

Six lessons on Grades 1 to 3:

1. Time for Television
2. What Are They Really Like
3. Super Heroes
4. Cartoons - Violent or Nonviolent
5. Commercials
6. The Television Picture

Seven Lessons for Grades 4 to 6:

1. Thinking About What We Watch
2. Heroes
3. Stereotypes
4. Commercial Targets
5. Techniques to Persuade
6. The News
7. The Television Industry

Attempts at definitions are subtle and the discussion is both more pointed and yet more open-ended. The comparison of the stereotypes on television to real world people leads naturally to an investigation of the different cultures represented in the class or school. This could assist in directly or indirectly undermining certain sterotypes already formed or forming in the minds of the students.

The lesson plans in the *Guide* are excellent. Collectively they are the basis for an entire elementary curriculum for teaching critical viewing skills. The thrust of this exceptional book can be seen in the logo on the cover. (see figure 1).

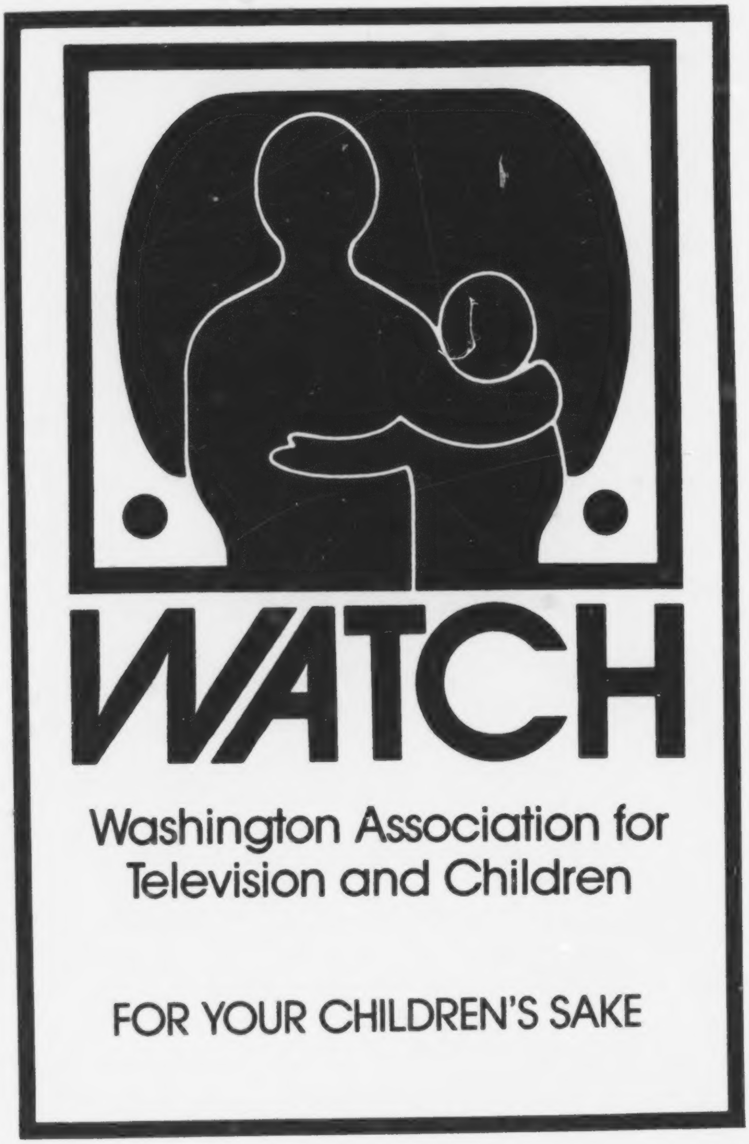

WATCH
Washington Association for Television and Children
FOR YOUR CHILDREN'S SAKE

figure 1. **WATCH** *Critical Viewing Guide* Logo

The *Guide* concludes with an evaluation sheet and resource suggestions for those reading the *Guide*. It is a good buy at $5.00.

In 1985 **WATCH** was successful in convincing its old adversary-turned-friend, Channel 20 WDCA, to produce a critical viewing project for children of the metropolitan D.C. area. Twelve area schools in D.C., Maryland, and Virginia were hooked directly into the project guided by the WDCA Advisory panel of which WATCH was the creative core. The series were titled:

TV Behind The Camera

Monsters, Magic and Make Believe

The Story Machine

Have I Got a Deal For You

The four broadcast between January and April, 1985. The project was considered a successful undertaking by all concerned. Using the medium to teach about itself would have pleased Marshall McCluhan and others of the Sixties media generation.

In conclusion, **WATCH** always felt it was better to light candles as well as curse mightily the darkness of children's programming on TV. I feel strongly that the *WATCH: Critical Viewing Guide* is a bright light showing the way to help children enjoy and understand the media.

Reference

Banta, M. A. and Creighton, F. K. (1985) *WATCH: Critical Viewing Guide*, Washington: WATCH. (P.O. Box 5462, Washington, D.C., 20016).

Elements of a Short Course in Effective Visual Communication

by

JACKSON TIFFANY

This short course was developed for professional image makers in the various media, or to those with career goals in this field. In planning the course, we assumed that students would already have technical competence and working knowledge of design, but that assumption proved to be sometimes not warranted. The intention was to expand awareness of factors in the communication cycle that are often not treated explicitly in courses in art and media production. The course had its base in communication theory. Some theory was presented to increase understanding of the elements in the process of visual communication. This was done so image makers could have greater control over those elements where they apply to their daily work, or be better prepared to respond to opportunities for professional growth.

Effectiveness, in this context, refers to the degree to which an image maker can convey intended meaning and feeling to designated viewers. This means that image makers need to be sensitive to the psychological and cultural considerations of their task. In practice, this leads to a focus on viewer research and its application to developing the statement of the problem to be solved through the techniques of the chosen medium.

In laying the groundwork for the course, I observed that some media workers with art school training tended to think of art and communication as almost mutually exclusive fields. Further, some media professionals resent the intrusion of audience research data into the design specifications of their projects. The plan for the course was designed to provide a frame of reference that would facilitate a creative resolution of those concerns.

As a part of that frame of reference, I define art as the communication of an awareness of value. We use the term art to talk about the art of living, the art of cooking, fine art, etc. We talk about the art of music, painting, and photography. Art encompasses all of these things because values are involved. The common use of the term "art appreciation" demonstrates the point. Appreciation is another way of saying awareness of value. When someone looks at a work of art and says "I like that", he or she is expressing awareness of value. Of course, we have several kinds of values. The cultural historian, Spranger (1928), identified six: theoretical, economic, aesthetic, social, political, and religious. The work of art can bring one or more of these categories of value into awareness. Art is a special kind of communication. Communication of meaning can occur without art being involved, and an abstract image can arouse an awareness of value without conveying specific meaning. We are concerned here with images that convey meaning, and we include all the ways that images are used in the mundane world of working and living. For some of our purposes, a connotation of value is an important part of the message, so art is included within our circle of interest.

The concern with images that convey meaning leads us to a concern for people, because meanings are in people, not in images. The image reminds the viewer of meanings pre-existing in memory, and at the same time it may provide some new information. The image producer needs to know something about the intended viewers to be able to select subject matter and design the image so the viewers will get the intended message. The more remote the audience is in cultural background from the producer, the more the producer needs to explicitly study the audience to be able to communicate with it. Representatives of the audience that is to some degree culturally remote may, in fact, live next door to the producer, but be separated by age, ethnic background, or any of a hundred differences. Their common experiences may provide the way to overcome the differences. The professional communicator needs to be something of an applied social psychologist and anthropologist. Advertising and Education are the fields that have made the heaviest use of audience research, but a communicator in any field will have occasion to do some audience research for high priority projects or be open to use data provided by specialists.

Both the human dimension and the media variables of design and technique are important in developing competencies in visual communication. We are emphasizing the human dimension because it is relatively neglected in contrast to the abundance of instruction in design and technique. One problem with studying the human dimension is that it tends to bring in theory, and theory is often hard to relate to practice. Useful theory will help image makers ask the right questions relevant to the specifics of situation and task. Valid answers to the questions can become part of the specifications for the creative problem solving process. Creativity, understood as a process, can be the link between theory and a resulting media product that conveys the intended meaning on several levels including the aesthetic.

When do images fail to communicate?

The first time I offered this course, I found some students had difficulty relating to the underlying assumptions. I needed to demonstrate that images do not always communicate. Our usual experience with the power of images to communicate leads us to assume that when we make and use a picture to convey meaning, that meaning will, in fact be clear to our viewers. Unfortunately, sometimes visual communication is not always so easy. To demonstrate this, I selected a series of slides that ranged from a few outstandingly clear images to several obscure ones that were meaningful, without verbal explanation, only to a specialist. The slides I used showed seven types of failure of images to communicate. I am sure the list is not a complete listing of the ways that this failure can occur, but it served the immediate purpose.

Images fail to communicate when they contain (as dominant elements):

1. Notational symbols from outside the viewer's cultural competence.
   Example: (for most Americans) Chinese Calligraphy.

2. Meaning dependent on analogue symbolic elements not understood by the viewer. As a result the meaning is missed.
   Example: A figurative illustration from a third century Arabian book on health.

3. Elements crafted with poor technique that have meaning, but can be understood only with difficulty, if at all.
   Example: A man is pointing at something. The focus is a bit soft and the area pointed at is shadowed. Viewers can only guess at the meaning of a vague shape in the shadow.

4. Ambiguity or lack of cue to meaning.
   Example: Radio telescope image of the star Betelgeuse rendered with computer generated color coded density splitting.
   Example: An abstract pattern is seen as only an interesting design of rolling black and white layers. Nothing in it suggests its origin as a diagram of the relationship between rock strata folded several times.

5. Elements with a superficial similarity to something known, but actually quite different from what is shown. Consequently, a meaning is assumed, but it is wrong.
   Example: A photomicrograph of liver tissue at high magnification is seen as pebbles and bones on a sandy beach.
   Example: What appears to be an abstract painting or a patchwork quilt is actually an aerial view of a new highway covered with scrap carpets soaked with water by the contractor to facilitate slow drying of new concrete.

6. Camouflage. This is an intentional design to achieve obscurity or deceive the viewer.
   Example: An artillery emplacement is made to look like a grove of trees.

7. Distraction or noise. The image contains unintended information or random visual elements that attract viewer attention and block or obscure the intended message.
   Example: A picture of an American farm family is intended to show a happy, productive life but it is perceived by a third world audience as comical because of their interpretation of the use of an electric toaster by the family.

Spoken communication in our usual face-to-face experience benefits from immediate feedback. Our written messages benefit from learning that carries over from face-to-face experience, but communication with visual images rarely has that direct feedback during the formative process. The major exception to this is in school experiences with drawing, video and polaroid photography. To provide a simulation of very simple visual communication with immediate feedback, the following exercise was used.

"ARCHIMEDES - a basic visual transaction"

Find another student to work with, and both of you review these instructions. Both of you will need paper and something to draw with.

One of you will be the source, and the other the viewer. Sit facing each other across a table. The source will visualize and silently decide upon a simple geometric shape like square, triangle, cube, hexagon, etc. The source will draw the shape on a piece of paper, and push it across the table to the viewer.

The viewer, on another piece of paper, will copy source's drawing and push the copy across the table to source. Source now examines the copy to see if it is acceptably similar to the original shape. If it is similar, source draws a circle around the copy shape, and that ends the cycle. If the copy is not similar in all important ways, source retrieves the original and silently points out the differences. Viewer then redraws the image until source is satisfied that it is similar to the original, source circles it, and the cycle is ended.

Source now draws a slightly more complicated shape, pushes it to viewer who again copies it by drawing to source's satisfaction. This is continued until the viewer has duplicated three images in a row without the need for correction by source. Then roles are reversed, and source now becomes viewer, and viewer becomes source.

Why are we doing this?

This is not theater of the absurd. "Archimedes" is an exercise in the basic communication cycle applied to a visual image. Practice with this exercise supplies an element missing for the source, but subjectively experienced by the viewer: the viewer's perception and duplication, as a mental image, of the objective message image. Further, all the steps of the communication cycle are simulated here. Of course, the feedback and correction step aren't ordinarily present like this, but this does roughly simulate the use of feedback.

Another element here is the confrontation with the viewer. If you are communicating, the viewers will be there, but you seldom will see them. Hence, the communication cycle may not seem to be real. Sooner or later, you will have viewers, and their reality needs to be kept in mind as you plan and produce your images. A question: Does this involve an encoding step? Where does the encoding come into it, if at all? Discuss this with your partner after completing both of your turns at being source.

The "Archimedes" simulation set the stage for some communication theory. The two following outlines of the communication process were distributed to students in print form..

Basics of the Communication Cycle

First, some definitions: one dictionary (Random House, 1962) defines communication as "..the imparting or interchange of thoughts, opinions, or information by speech, writing, or signs." To communicate is to "give to another as a partaker." The Latin root means to share. A technical definition identifies the elements of the process. The following is one useful listing of the elements. It could be elaborated much further.

1. Source
2. Formulation of message
3. Intention
4. Encoding
5. Send the message

5 source steps

6. Distance (via channels)

7. Receiver
8. Attention
9. Perception
10. Decoding
11. Understanding

5 receiver steps

Feedback is not necessary, but if it functions, source will know whether or not message was received. Actually, feedback is another communication cycle, the reverse flow; but let's add it as the 12th step and have an even dozen.

12. Feedback

Technically, communication is the formulation of a message by source, intending to share it with someone, encoding it in a suitable form, sending it across a distance so as to catch the attention of a receiver who perceives it, decodes it, and understands the message. For two-way communication, the receiver now becomes source-two, formulates an acknowledgmemt that the message was received, and goes through the steps back to source-one, who is now receiver-two. (Berlo, 1960; Hubbard, 1973)

In many message situations a special cycle is present to, in effect, announce or forewarn that a message is coming. This is called the "foreshadow", meaning the part of the communication that indicates a message is coming. It functions to catch the receiver's attention so the full message will be perceived. In face-to-face situations a reverse foreshadow can be present. This is a signal sent by the receiver indicating that she or he is ready to receive the message. In visual communication, can you think of examples of foreshadowing and its reverse? (Hall, 1971)

The foreshadowing is a special case of metacommunication: communication about communication. Explicit metacommunication can be an important problem solving tool when sending complicated messages or trying to reach audiences unfamiliar with a medium or a code. You may need to explain or show, in a code they understand, how to use or decode your message. This assumes your message could not be readily translated into a sign-system they could understand directly.

Discussion of the Matrix

I prepared the matrix (next page) to give students a concise overview of the subject of visual communication. The matrix expands on the elements of the communication cycle by bringing in items directly related to the use of images in media. The emphasis is on the origination phase of the process.

A number of factors influence visual communication, but aren't necessarily a direct part of the cycle itself. These include experience, emotions, beliefs, creativity, etc. They seemed important to understanding visual media but didn't seem to fit into the cycle. It occurred to me that these elements apply to each step of the process for both originator and receiver. A matrix would diagrammatically relate the two sets of items.

One item, intention, is duplicated in the two lists (III and XIIIE). It should operate early in the cycle and it should give direction and energy the rest of the way through the cycle.

Gesture appears at two points under encoding (IVB) because gestures can be notational (i.e.: American Sign Language) or analogous (i.e.: a filmed action like hitting a nail with a hammer where the action signifies itself with no conventional symbolic meaning intended or implied).

Noise (XIIIG) appears as an uninvited element. It can intrude at any step.

A body of information could be developed for each cell of the matrix. We won't try to do that here. Our effort is limited to state-of-the-art information that, by present understanding, has useful application. As we gain further experience in working at this level of awareness of visual communication, we may find that some of the neglected cells of information are important, and we will need to study further.

VISUAL COMMUNICATION PROCESS

A Conceptual Matrix
(not an outline of the course)

Jackson Tiffany
January 5, 1982
revised October 25, 1982 and
January 15, 1983

XIII. Elements That Apply to Each Step of the Process

	A. Experience	B. Context	1. Culture	2. Situation	C. Emotion	D. Values	E. Motives and Intention	F. Cognition	1. Search and discovery	2. Creativity and problem solving	3. Visualization	4. Beliefs	G. Noise
I. Source													
II. Consideration & Formulation of Message by Source													
III. Intention													
IV. Encoding													
A. Audience factors (see VII to XII below)													
B. Media choice and sign-system characteristics													
1. Notational sign-systems													
a. written													
b. spoken													
c. gesture													
2. Analogous sign-systems													
a. audio													
1) music													
2) sound effects													
b. iconic													
1) drawings and paintings													
2) photographs													
3) film and video													
4) objects													
5) actions and gestures													
3. Mixed analogous - notational sign-systems													
C. Signifying processes													
1. Levels of encoding													
a. denotation (essential form)													
b. connotation													
c. myth													
2. Signs													
3. Semantics													
4. Metaphor													
5. Syntax and design													
6. Metacommunication													
D. Production													
1. Plan for production and delivery													
2. Actual production													
V. Send the Message													
VI. Distance (channels)													
VII. Receiver													
VIII. Attention													
IX. Perception													
X. Decoding													
XI. Understanding													
XII. Feedback and Evaluation													

BEST COPY AVAILABLE

To focus learning efforts on those aspects of the communication process most likely to be relevant to application by our audience of image makers who were assumed to be competent in the technical and design aspects of their media, I identified nine proposations for effective visual communication. These became the agenda for the balance of the course.

Effective visual communication requires:

1. INTENTION. You need to decide that you are going to communicate a message to a defined audience, and commit the time, energy, and resources to do it.

2. CREATIVITY. Know and be able to apply the steps of the process of creative problem solving in the design and production of images. Creativity integrates theory and practice.

3. VALUES SENSITIVITY. Be clear on the values you want people to be aware of as a result of seeing the images.

4. ENCODING. Recognize that when a message is conveyed through any sign system, including images, it is to some degree encoded, and therefore viewers need to decode it. The encoding should facilitate decoding, processing, storage in memory, and retrieval of information by viewers.

5. KNOWLEDGE OF AUDIENCE. Work toward knowing the viewers with reasonable accuracy using objective or intuitive methods as appropriate. Include data on audience understanding and feelings about the message and your objectives. Also get data on the context in which viewers are likely to receive the message.

6. CHOICE OF SIGN-SYSTEMS. Know the alternative sign-systems and select one or more appropriate to the task and the audience.

7. DENOTATIVE OBJECTIVE. Develop clarity on the essential attributes that must be shown if the image is to convey the intended meaning to its viewers.

8. CONNOTATIVE OBJECTIVE. Develop clarity on the feelings and other connotations that you want viewers to get from the image.

9. FEEDBACK. Be open to feedback from viewers as a way to learn whether or not a message has been received, and as a way of improving future performance.

Work with these propositions was done, when time permitted, by simulations involving other students in the class as the specified audience, research with this audience, production of images (usually as drawings) and testing of audience response. A form of the semantic differential (Osgood, Tannenbaum and Suci, 1957) was used to measure the extent to which connotative meaning was communicated. The semantic differential helps to overcome the problem that Roland Barthes (1977) saw in trying to define connotative meaning.

References

Barthes, Roland, The Rhetoric of the Image in "Image, Music, Text", (page 47), Hill and Wang, 1977.

Hall, Edward, in Bosmajian, Haig (Ed.) "The Rhetoric of Nonverbal Communication: Readings," Scott, Foresman, 1971. pp. 76-77.

Osgood, Charles E., Suci, George J., and Tannenbaum, Percy H. "The Measurement of Meaning." Urbana: University of Illinois Press, 1957

Spranger, E., "Types of Men," (translated by J. W. Pigors), Halle (Salle), Germany: Niemeyer, 1928, pp. 66-67, 257. Cited by David C.McClelland, "Personality," New York, Dryden, 1951, p. 258.

I am in debt to two sources for the communication cycle concept outlined here. Their ideas are combined in this formulation.

Berlo, D.K., "The Process of Communication," Rinehart Press, 1960.

Hubbard, L.R., "Axiom 28 Amended," Hubbard Communication Office Bulletin, 5 April 1973.

From LOGOS to LOGON[1]: Media in the Integrated Curriculum

by

W. NIKOLA-LISA

This morning's topic—though straightforward at first glance—has a multidimensionality about it that warrants a few introductory remarks. First of all, one focus of this presentation centers on the development of an integrated or thematic approach to teaching. It is an approach that attempts to weave the various disparate threads of elementary school curricula into one coherent fabric of study. Concurrently, and by way of example, I have chosen to highlight my presentation this morning with samples of an integrated unit I designed a number of years ago with several second grade classrooms. The unit takes as its focus the legend of Robin Hood, a popular medieval tale of a yeoman-turned-rogue. The way in which these two aspects of this presentation relate is very similar to I. A. Richards' (1936) understanding of the two components inherent to metaphoric production: the examples from the Robin Hood unit become the "vehicle" for presenting the "tenor" of this discussion.

Concerning the specific focus of this presentation, on the other hand, we must include the more narrow focus of using media as a foundation block for developing the integrated curriculum. This focus is both explicitly and implicitly stated in the presentation's title—"From LOGOS to LOGON: Media in the Integrated Curriculum." The implied content is found in the first half of the title which alludes to an historical or evolutionary approach to media use. LOGOS, the word, is the original performative art; it is the original living word transmitted through the ethereal kinsmanship of word-of-mouth communication. The tribal storyteller relied on LOGOS to transfix his audience. The ancient bard or rhapsode relied on LOGOS to communicate the full body of Homerian tales. Minstrels, troubadours, and jongleurs alike relied on LOGOS to spin their provincial yarns, as well as transmit the news of the day.

LOGON, on the other hand, represents the word transformed through technological evolution. The WORD in the hands of ancient storytellers represented the first technology— the technology of eye-to-eye communication. With the introduction of movable typeset and, more recently, the microchip, we have lost that original, interpersonal modem. Whereas the storyteller's consortium of props and icons and musical instruments barely rippled the surface of performative technique, these later two innovations have radicalized the manner in which we communicate—with ourselves and with one another. The chrysalis which held LOGOS firm for so long has finally emerged in new form—LOGON!

I know this is a very long introduction to a-not-so-complicated-subject. However, it is a necessary beginning for the ideas I wish to share with you today. And, perhaps, by way of weaving all these disparate threads together, I should like to read a citation from J. C. Holt's (1982) authoritative account of the life of Robin Hood. It is in the preface to this book that I found the original guiding light for this presentation. Holt begins by sharing his bias with his audience. It is a bias which places the greater amount of emphasis on the legend rather than the man, on the story rather than on the personage of Robin Hood. It is such an emphasis which also sheds clarifying light on the evolution of LOGOS to LOGON.

> The identity of the man matters less than the persistence of the legend. That is the most remarkable thing about him. And the perpetuation of the legend involves others: those who told the stories and those who listened to them. But while the legend survived, the performers and the audience changed from one generation to the next. What began as an oral tradition ended as a television script. (Holt, 1982, p. 7)

How, you are asking yourself now, does this rambling introduction—bordering on the prosaic—relate to the subject at hand? My answer is simply that teaching by the thematic or integrated curriculum approach is inseparable from a multi-media climate that emphasizes the historical aspects of LOGOS transformed into LOGON. In my own experience as an elementary school teacher, the theme or topic chosen always became cemented first by many storytelling and/or performative reading sessions. LOGOS was primary in the classroom. Specifically, in the present example, I read and/or told stories from Howard Pyle's (1946) delightfully pictured edition of The Merry Adventures of Robin Hood for many days—weeks—before launching into any formally structured activities. LOGOS set the precedent. LOGOS established the mood, the tone, the climate of the classroom long before we began to explore the selected theme in any systematic manner.

The intimacy between the storyteller and the audience is an intimacy rarely achieved in any other setting. The storyteller or performative reader has the advantage of seeing, seeing directly into his or her audience's eyes. There is instant rapport; there is instant relationship. LOGOS, in both instances, becomes more than merely uttered typescript; it becomes the communication of one soul to another. As the storyteller's eye first surveys the listening audience, there is a deep summoning of passion, of life's deeply running current, of the ineffable—the ineffable put to word through story!

> In Merry England in the time of old, when good King Henry the Second ruled the land, there lived within the green glades of Sherwood Forest, near Nottingham Town, a famous outlaw whose name was Robin Hood. No archer ever lived that could speed a gray goose shaft with such skill and cunning as his, nor were there ever such yeomen as the sevenscore merry men that roamed with him through the greenwood shades. Right merrily they dwelt within the depths of Sherwood Forest, suffering neither case nor want, but passing the time in merry games of archery or bouts of cudgel play, living upon the King's venison, washed down with draughts of ale of October brewing.
>
> Not only Robin himself but all the band were outlaws and dwelt apart from other men, yet they were beloved by the country people round about, for no one ever came to jolly Robin for help in time of need and went away again with an empty fist. (Pyle, 1946, p. 1)

Reading transfixes the gaze, captures the mind, subdues the body. But reading or storytelling alone is not enough to fully engage the young child. Developmental psychologists have been telling us for years that the primary action of the mind for the young child is first the action of the body. Consequently, along with the imaginative fascination of Pyle's text, I also use Alfred Noyes' (cited in Daringer & Eaton, 1935) moving poem "A Song of Sherwood." Not only does the content reiterate the theme of the instructional unit, but its metered cadence also provides a different entry point into the child's imagination—direct entry through the kinesthetics of whole body movement.

The poem, however, is not merely read: it is performed. It is performed first silently through related hand movements (the content of a particular line is associated with appropriate movements reflecting the meaning of that line). For example, where the poem begins "Sherwood in the twilight, is Robin Hood awake?/ Gray and ghostly shadows are gliding through the brake" (Daringer & Eaton, p. 17), instead of reading the words—the actual verse—hand movements are substituted for each line. The hands first move strongly outward showing Sherwood in the twilight hour, and then fold quickly back on themselves, clasped and folded under the chin, to show Robin Hood asleep. This pose is held only for an instant as the hands once again shoot out over the head to get ready for their portrayal of "Gray and ghostly shadows." And, then, falling in a subterfuge of waving arm movements, they come to rest before the beginning of the next line. It is in this manner that each child has a distinctive—though not yet articulated—concept of the story BEFORE ANY WORD IS UTTERED! Likewise, it is at this point that the words are applied and the entire poem is orchestrated into a ballet of voice and movement.

Sherwood in the twilight, is Robin Hood awake?
Gray and ghostly shadows are gliding through the brake,
Shadows of the dappled deer, dreaming of the morn,
Dreaming of that shadowy man that winds a shadowy horn.

Robin Hood is here again: all his merry thieves
Hear a ghostly bugle note shivering through the leaves,
Calling as he used to call, faint and far away,
In Sherwood, in Sherwood, about the brake of day.

> Merry, merry England has kissed the lips of June:
> All the wings of fairyland were here beneath the moon,
> Like a flight of rose leaves fluttering in a mist
> Of opal and ruby and pearl and amethyst.
>
> Merry, merry England is waking as of old,
> With eyes of blither hazel and hair of brighter gold:
> For Robin Hood is here again beneath the bursting spray
> In Sherwood, in Sherwood, about the break of day.[2]
> (Daringer & Eaton, 1935, p. 17)

This clearly is LOGOS, the living word, the metered word, coming alive before the child. These various forms of direct communication—storytelling, performative reading and dramatized poetry—set the stage. They lay a careful foundation. And, why not?—especially as we place these particular strategies in the context of our stated thematic unit: Robin Hood, the legend and the man. Drawing again on J. C. Holt's (1982) academic work, the appropriateness of such media stems not only from their appeal to young children, but also—and perhaps more importantly—from the fact that this was the media of that particular era.

> Minstrels performed not only in the royal court and in aristocratic households, but in the great monasteries, in the market-place, and in inns where they mingled with other travellers. Occasion was found not only in the entertainments of nobles and gentlemen but also in the festivals of the church, in fairs and markets, in occasional gatherings in the wayside inns as men halted for a night's rest or simply sought shelter from rain which fell on rich and poor alike. Minstrels who were story-tellers worked with fencers, jugglers and bear-wards and also alongside choristers and the participants in miracle plays. (Holt, 1982, p. 141)

It is only after these diverse and wonderfully alive forms of communication have captured the fancy and imagination of each child that full-blown, in-depth research projects (which are the mark of the integrated curriculum approach) can begin in earnest. For the purposes of this paper, I will explore two specific sets of possible applications in some detail: the research-based constructional project and the small group creative drama presentation.

Concerning the former, I should say parenthetically that for young children (children in the primary grades), a "research" project should always have some hands-on, constructional component integral to the completion of the proposal. In the examples I will cite this morning, not only were students involved in researching particular time periods and/or historical events, but they were as well involved in constructing models or small replicas of different facets their chosen topic touched upon.

For instance, one group of students decided to research the topic of castle construction. Their first reference, incidentally, was from Pyle's (1946) text where there is constant allusion to the Sheriff of Nottingham's castle, to Sir Richard of Lee's castle, as to Buckingham Palace itself. Pyle's text not only sparked their interest but also provided a wealth of factual information concerning the nature of castle construction and maintenance. From this reference source, then, individual members of the group spread out quickly into other more authoritative resources. And, in the end, the construction of two types of castles (which ultimately split the group in half) was agreed upon: the simple wooden prototypic motte-and-bailey and the later fitted-stone castle with centralized dungeon.

In the first case, after much investigation or book research had been accomplished, students began to make basic decisions concerning the constructional aspects of the motte-and-bailey castle. These decisions were in part influenced by the historical aspects of the motte-and-bailey's construction and, as well, reflected the availability of found or purchased materials. Building on a plywood base, students first layered paper mache to build up the knoll which the bailey traditionally stands on. This was painted with a mixture of green or brown tempera paint. The fortress itself, with its encircling wall and central wooden tower, was built out of beheaded match sticks glued laboriously together to give it both strength and definition. The capstone was an originally designed pennon or flag that flew above the entire endeavor.

As for the stone castle, more preparation seemed to go into the initial stages where various blueprints were drawn up and discussed as to both their originality and authoritativeness. Each individual part of the castle, which traditionally has an explicit purpose and name, was considered. Once the blueprint was accepted by the entire group, then the laborious task of "scaling" the model began. Obviously, at the second grade level, this was not done with mathematical precision; however, in the Brunerian tradition, the concept was discussed and did act at times as a guideline for making further decisions. And, the most basic one was choice of materials: SUGAR CUBES!—the perfect building material for a replica stone castle. Again, building on a plywood base, students began the tedious job of gluing sugar cube after sugar cube (though following a design of their own making) until the castle began to take on its own definition at a height of about ten to twelve inches.

The lessons learned—by teacher and student alike—in these groups and in others that chose a different constructional activity were manifold: (1) students learned to cooperate in their activities, to make decisions that all participants contributed to; (2) students learned to direct their own learning, both within the group and individually; (3) students also learned how to be resourceful, how to call upon a number of resources and to manage them into the completion of a stated objective; and (4), though not necessarily finally, students learned that school was a place of discovery, a place of wonder and exploration. If these only were the lessons students came to understand, then we could stop right here. However, the integrated curriculum approach has other potential learnings or attributes I am compelled to discuss.

Another method of organizing sustaining activities around a central curriculum theme, which has been already alluded to, is by encouraging small group creative drama presentations. Again, the choice of a legend or story—in this case the legend of Robin Hood—as a unifying element lends itself wonderfully for developing small group drama presentations. The approach I use has two distinct paths: on the one hand, I utilize episodes directly told or read from the Robin Hood story to act as natural organizers for future presentations; while, on the other hand, I systematically explore the nature of characterization using a sequence of activities designed for use with children by Pamela Prince Walker (1957).

Concerning the former approach, small groups with four to five members each were designated. Each group selected both a scene from the Robin Hood story and a method of presentation. A number of presentational styles were discussed with the whole group and the only guideline that everyone subscribed to was that each group selects a different story particular to their own needs and interests, and that the mode of presentation they choose be unique. This agreed upon diversity, hopefully, insures a multiplicity of ideas and explorations.

One group of students I worked with chose to act out the story of Little John wrestling Eric o'Lincoln, a story that occurs early in Pyle's (1946) narrative in his attempt to establish the character of Little John. The group thought that actually acting out the scene, building a small wrestling arena, grand stands, and the like would be extremely exciting. The first step in this process, after they had agreed upon both the story and the presentation mode, was to read the story among themselves to get a better understanding of it. Then they plotted out the story by scenes in order to break it down, and, at the same time, familiarized themselves with each character. After they had a chance to match the story with their own resources, eg., number of group members, available materials, etc., then they began assembling the parts into a whole—individuals or partners would rehearse a scene, others would spend their time constructing the wrestling arena and stands, still others would prepare decorations and costuming for the event. Running parallel to these activities were group art and drama activities as well in which every group member participated, and which related back to the Robin Hood story as a whole.

As this set of activities was happening (and, if you remember, it was happening for three or four other small groups within the classroom), I worked with the entire class on dramatization strategies outlined by Walker (1957) in her book Seven Steps to Creative Children's Dramatics. Walker's method is sequentially outlined with very explicit activities provided to reinforce the dramatization concepts. The first two steps deal with concentration and an exploration of the five senses and what part they play in dramatics. Walker also explores the differences between physical activities (running, swimming, jumping, etc.) and physical states (headache, upset stomach, sunburn, etc.), and in many humorous juxtapositions provides exciting acting vignettes for children to explore. In her third step the use of colors or emotions are explored; this is followed—in her fourth step—by an examination of animal behaviors in relationship to certain human personality traits, eg., a lion being bold, a mouse timid, etc. This latter step also lends itself quite readily to readings from Aesop's fables where animals repeatedly exemplify human qualities.

At this point in Walker's book, the characterization concepts and activities become more complex and require more explanation and development. The fifth step in this sequence focuses on features of the physical body—what Walker calls the "leading centers" and the "three spheres." Every character has a body part that "leads"—actually moves first—and through time begins to characterize that figure. For instance, to make the point close to our topic, think of Friar Tuck of Robin Hood's merry band of yeomen. He is quite rotund and jolly, though with a stern eye, To imagine him moving we would have to imagine his leading center—that part of his body which goes forth first—his stomach. Walker's approach, then, is to have children practice this peculiarity not only in a variety of situations but also in its most extreme forms.

Related to the concept of leading center is the three forms or spheres wherein all people can be classified (it has some similarity to the early body types of endomorph, mesomorph and ectomorph). Again, to make the point close at hand, Robin Hood would probably be a "torso" type due to his sincerity, his heartfeltness, and his joviality. On the other hand, Little John might represent a "limb" type due to his size, his roughness, and his undaunted personality. The third type or sphere is the head and might best be represented by Alan-a-Dale, Robin's minstrel, who is ever so light on his feet, quick of tongue, and lofty in thought. Following Walker's pathway to creative dramatics, children would be provided a very concrete set of experiences to match the story character with different facets of other tangible realities, e.g., color, anaimals, body parts, etc.

In the last two steps of the method, Walker provides information regarding character's objectives and counterobjectives, ways in which different characters act to obtain certain explicit (but usually implicit) goals. Walker, as well, provides—as her seventh step—a host of games and activities to practice each of these different facets of her method, and then notes on how to produce a play. The overall set of activities parallels well the group work already in progress. As each group of students molds or carves out a story from the Robin Hood collection, reinforcement of the characters they may be portraying or representing in some fashion occurs in a substantive way.

All in all, the techniques proposed in Walker's book are a wonderful asset to the thematic approach where acting out scenes from the selected theme or supporting literature are called for. It is another way of providing structure from which to gain complete freedom within the context of an organized activity. And, it provides for the teacher as well an opportunity to assess the different responses each child might have to the material

We now come to the last segment of this paper wherein I would like to explore the use of film and/or video tape material in the integrated curriculum approach. In many cases the use of film footage could be very similar to how teachers normally use film in the classroom—as embellishment, and in its more baser usage, as entertainment exclusively. Due to the various facets of the integrated curriculum, its complexity of ideas and activities, the opportunity avails itself to use media—film or video tape—in a highly critical manner. In our case, with the story of Robin Hood, the key goes back to Holt's (1982) ideation on the persistence of the legend rather than on the man. This emphasis naturally excites the critical eye. Consequently, in this integrated unit I utilized the colorful CBS Video (1984) The Adventures of Robin Hood, directed by Michael Curtiz and William Keighley and starring the insuppressable Errol Flynn. My decision to present this material within the context of the thematic unit stemmed partially out of the need to supplement the storytelling and reading sessions I had been doing regularly. My decision was also motivated, however, by the exquisite job Curtiz and Keighley did on capturing the mood and setting of the original legend. This, more than its authenticity or historical accurateness, was an important motivational device for all the students. And, our first viewing was an uncritical one; we watched Errol Flynn and Olivia D'Haviland for the sheer joy of it.

However, to stop with that one viewing, to stop with its entertaining aspects alone, would be an incomplete and misleading event. In point of fact, the students wouldn't allow it. They, as well as myself, became intrigued with the whole historical aspect that underlies the legend—merry, merry England in the time of King Henry the Second! The search for historical roots was on, and became manifest in their small group constructional projects—the motte-and-bailey and stone castle work, work on heraldry and coat-of-arms, and work on siege weapons—in their self-initiated independent projects, and even the group work in creative dramatics. Consequently, another showing of The Adventures of Robin Hood (CBS/Fox Video, 1984) was inevitable. And, so too, was Walt Disney's (1973) Robin Hood, a completely animated stylization (bastardization) of the original tale—which indeed brings us full circle to Holt's (1982) observation of the story evolving from the oral tradition only to end, at least at this point, as a television script!

One might say that ending as a television script carries a pejorative connotation, and well it does. However, following Holt's (1982) own emphasis, all of these very different ways in which the Robin Hood story has unfolded over the years provides us less with cause for dejection and more with a fountain of images and ideas with which we can view with a critical and aware eye. And, this marks another important feature of the thematic or integrated curriculum approach: by weaving together many threads from different topical or subject areas students can view holistically the subject matter at hand. They can come to the subject from many vantages points, not just to memorize verbatim and later regurgitate, but to comprehend essential themes, investigate uncertain principles, and explore points of curiosity. Again, to make the case relevant to our discussion, how many of you know:

- that in the thirteenth century fighting with the sword was the preferred method of encounter, even above the bow, and most certainly above the cudgel or staff
- that the only king mentioned in the oral and early written tales is "Edward our comely king" (Holt, 1982, p. 37), and that there is nothing at all in the early stories to associate Robin Hood with Richard the Lion-hearted or even with his brother and successor, the evil John count of Mordain
- that there was no Maid Marian (she only entered later, about the sixteenth century, via the May Games)
- and, finally, that Robin Hood was a yeoman, "not a peasant, nor a knight, still less a dispossessed nobleman" (Holt, 1982, p. 37).

Certainly, these facts—in and of themselves—are of little importance to us. But, if we have been raised only on the thin gruel of Disney's (1973) Robin Hood, where a fox is the protagonist, a singing bear his righthand man, and a snake the villain, then these odd-assorted facts do become vitally important—as constant reminders of the uncritical attitude we typically foster in the classroom! Media, in its wide diversity of forms, should never be mere filler, or even purely entertainment; it should hold a viable role within the curriculum, a role which fosters critical thinking skills.

The movement from LOGOS to LOGON has itself been a movement from the subtle, the unconscious—the dream state of tribal living—to the highly articulate and conscious. The high technology of this media age represents not an attendant form of communication, but a primacy of expression of which we are all participants—even, and perhaps especially, our children. However, this is not to say that LOGOS—the word—should reside completely outside our locus of control in the media forms we have created, but must start at the onset in a blend of presentation styles that includes both the spoken word and the mediated word. The integrated curriculum approach advocated here provides such a ripe terrain in which to execute such a blend. Whether we choose to start with the oral tradition or the television script, our aim should always be to include a wide angle of media formats which provide not only an atmosphere of critical thinking and judgement, but also provide multi-entry points for the young child, in particular, to become engaged in the media forms of this age.

References

CBS/Fox Video (1984). The Adventures of Robin Hood. Farmington, MI.

Darington, H. & Eaton, A. (1935). The Poet's Craft (pp. 17-19). New York: World Book Company.

Holt, J. C. (1982). Robin Hood. London: Thames & Hudson Ltd.

Pyle, H. (1946). The Merry Adventures of Robin Hood. New York: Charles Scribner's Sons, Publishers.

Richards, I. A. (1936). The Philosophy of Rhetoric. Oxford: Oxford University Press.

Walker, P. (1957). Seven Steps to Creative Children's Dramatics. New York: Hill and Wang.

Walt Disney Productions (1973). Robin Hood. Burbank, CA.

Footnotes

[1] The author wishes to acknowledge the work of Drs. Lynda and Michael Sexson, Departments of History/Philosophy and English, Montana State University, Bozeman, Montana, for their initial development of the LOGON concept. As directors of LOGON '84, an interdisciplinary conference, they provided a fertile ground for developing this idea.

New Approaches in Media Education for Physically Handicapped Adolescents

by

KARON SHERARTS

INTRODUCTION

This paper discusses aspects of the first year of a multiyear pilot project designed to explore ways electronic media (video, audio and computer graphics) can be used to bring arts education to physically handicapped and learning disabled adolescents. The pilot, initiated by Film in the Cities (FITC), a regional media arts center located in St. Paul, MN, continues the organization's fifteen year history of providing media education to youth.[1]

Media (film, television, radio and computer graphics) are the primary sources of information and entertainment in the United States, and in this context convey shared cultural assumptions about what media are and what forms they should take. Often the distinction between reality and artifically structured media images is not obvious to viewers. If media are to be used as vehicles for expressing an individual's voice, one must think about media differently, expanding the creative possibilities beyond the familiar constructs of commercial formats.

---

[1] Film in the Cities (FITC) is a non-profit regional media arts center located in St. Paul, MN. Its activities include film and photography exhibition, grants and fellowships for independent media artists, equipment access for artists, education programs for youth and adults, and specialized workshops. FITC's purpose is to foster the creation and appreciation of film, photography, video and audio as art forms for a public of diverse ages, income levels and backgrounds. FITC serves students and educators through a wide range of innovative programs: The Minnesota Media Arts Education Project; projects with physically handicapped adolescents; summer workshops for youth and educators; short-term residencies; and special projects developed in response to requests from organizations and schools. FITC is an educational resource to regional education institutions and youth programs. The Arts and Handicapped Project, developed and administered by FITC's Youth Education Director, Karon Sherarts, was made possible with funding from the National Endowment for the Arts, the Minneapolis Public Schools, Very Special Arts-Minnesota, and Standard Products Foundation of Minneapolis.

In schools media are generally used to assist able-bodied and handicapped children with specific educational goals; for example, to build reading, math, and communication skills. Video is generally used to enhance communication skills or to produce news shows which emulate the television format. Media are rarely used to promote creative thinking, develop visual literacy skills, or as a tool for students to express their own ideas.

Handicapped adolescents are less likely than their able-bodied peers to have access to the arts or opportunities for creative expression. Parents and educators are concerned with these special students' overall development. However, in practice, acquiring and maintaining the academic skills for students to be placed in the least restrictive setting is sometimes emphasized at the expense of nurturing the whole child. The importance and vital contributions of the arts are often overlooked in the education of special students.

Because video, audio, and computer graphics do not require the physical dexterity needed in other art forms, they offer physically handicapped students a unique opportunity for artistic and creative expression. Two types of barriers--physical and conceptual--must be overcome to make this possible. Physical barriers are easily overcome by modifying equipment. Extending wires, modifying control buttons, or mounting cameras on tripods which are attached to wheelchairs are easily accomplished. In contrast, conceptual barriers are inherently more difficult to address because they pose questions about the nature of media and their role in education. Recently, Dr. Patricia Greenfield has argued that educators "must begin to think more seriously about moving from domination by a single medium [print] to an increasingly multimedia education system... in which the electronic technologies of audio, video and computer graphics will surely play a key role."[2] The challenge is to develop a pedagogy which integrates the teaching of aesthetic and technical elements and regards the use of media as opportunities for self-expression and creativity.

PROJECT OVERVIEW

The utilization of electronic technology allowed handicapped students to explore new possibilities for individual expression, created opportunities for interaction with non-handicapped peers, enhanced self-esteem, encouraged teamwork, integrated curriculum areas, developed visual literacy skills, and promoted creative problem-solving.

The importance of using independent media artists as teachers to accomplish the project goals cannot be underestimated. In contrast to media specialists, technicians and commercial producers, artists use media to express their own voice. An artist's intimate acquaintance with the process, frustrations and rewards of using media in creative ways offer unique preparation for teaching media as art forms. In addition, an artist's approach to media provides a role model for students and introduces them to new career possibilities. The project artists, Vernon Norwood and Judith Walcutt, are accomplished artists with teaching experience and a sensitivity to students' special needs. Vernon Norwood is an independent video maker and composer who works with video, computer-generated imagery and sound synthesis. Judith Walcutt is an independent radio producer whose credits include The Spider's Web and a number of special projects for WGBH in Boston.

---

[2] Dr. Patricia Greenfield, "Multimedia Education: Why Print Isn't Always Best," American Educator, Fall 1986, pp. 18 and 38.

The nine month pilot successfully structured opportunities for students to learn to control pervasive mediums and use them as directed by their developing vision and imagination. Video and audio were taught as ways to present participants' ideas, not as prescribed commercial formats to be imitated. Students conceived, taped and edited projects, carrying them through all stages of production with assistance from the artists. The completed works convey the makers' interests, point of view and approach to media. Their works have clear beginnings and endings and use visual and/or aural elements creatively. Additionally, classroom teachers received in-service training in video and audio, and some assisted artists in working with students.

Although this paper focuses on video, audio was an equally important aspect of the project and was of more interest to some students. Students made seventeen (thirty-second) sound poems called Radio Haiku which were broadcast on local stations.[3]

---

[3] The Radio Haiku concept, developed by Judith Walcutt, provided a flexible format to accommodate the varying needs of students. Three-line poems (after the style of the 17-syllabled Japanese poetic form) were written by the handicapped students or by classmates in their mainstream English classes. This process gave handicapped students an opportunity for visibility as leaders among their peers. A variety of sounds were collected by the handicapped students, who also were taught to cut, edit, and mix their tapes. In teams of two and three, students went to radio station KBEM-FM to combine sounds (many of which have the quality of musique concrète) with the live voice track. Their haiku are short, simple pieces on a variety of subjects. A few, like this poem by a blind student, are direct statements about experiencing the world as a handicapped individual:

> My fingers tell all--
> Smooth silk, soft cotton, cold snow--
> How I know the world.

The sounds of this haiku include fingers touching something--the world.

A variety of topics and genres are apparent in the students' fourteen short video works which range from thirty-seconds to ten minutes in length. Some tapes addressed typical adolescent interests (a documentary on a teenage graffiti artist; a narrative about break dancing; and a music/video set to Cindy Lauper's popular song, "Girls Just Want To Have Fun"--in which handicapped students, including those in wheelchairs, dance). However, aspects of the students' approaches to these topics were unique. There were personal documentaries about a lake, zoo animals, and a poetic work exploring the coming of spring. Other students preferred an experimental approach to media. For example, one paraplegic student creatively conveyed the visual and social experience of passing through the crowded halls of her school in a wheelchair. Finally, a number of thirty-second video haikus choreographed a flow of images to accompany the Radio Haiku sound poems.

Anwatin, a Minneapolis junior high school committed to educating handicapped students and supporting the arts was selected for the nine-month pilot project. At this site, physically handicapped and learning disabled students were mainstreamed into most classes and met as a group for one adapted class each semester. The seventeen participants had various disabilities including spina bifida, cerebral palsy, multiple sclerosis, and visual impairments, as well as physical disabilties resulting from accidents, polio, strokes and undiagnosed causes. In addition, a few students (12%) also had learning disabilities. The group, nine girls and eight boys, was forty-percent minority, and included, Black, Southeast Asian, Colombian, and American Indian students.

Planning sessions which involved project staff, district and school-based personnel successfully laid the groundwork for project implementation.[4] These sessions established a supportive relationship between the school and project staff and led to developing a pedagogy which motivated students to use media creatively. Prior to the start of class sessions it was necessary to: secure and adapt equipment;[5] set up a media studio for the duration of the project; identify students' individual needs; develop appropriate sequences of audio and media learning activities; schedule students' time; and arrange transportation for shooting sessions outside the school and field trips.

---

[4] Participants included: the District Media Department, which provided equipment for the project; District Special Education Directors; Anwatin's coordinators for the physically handicapped and learning disabilities programs, special education teachers, classroom teachers, arts coordinators, an occupational therapist, nurses; FITC project director, and artists.

[5] The basic equipment used for video production included two ½" VHS portapack units, 1 editor, 1 character generator, good-quality microphones, portable light kits, an assortment of tripods, cables, and a dolly. For audio production, equipment included good quality cassette recorders, editing blocks and supplies. Additionally, students had access to the Minneapolis Public Schools' radio station (KBEM-FM) for mixing, post-production and broadcast of their Radio Haiku.

APPROACH

Several weeks before the media classes began, the artists met students, spent time in their classrooms, and presented an informal hands-on introduction to video and radio. In addition, the video artist was invited to accompany students on a ski trip and enlisted students' help in video-taping activities. The resulting tape, eagerly viewed by students and parents, also was used as raw material for visual exercises (e.g. critiquing and editing).

A flexible learner-centered curriculum introduced aesthetic and technical concepts and prepared students to work on productions of their own design. Students with similar disabilities and/or fine motor skills were grouped together for these introductory sessions. This allowed the artists to observe each student's potential for using equipment and to make necessary adaptations. Each grouping was composed of three to four students.

In the video portion, eleven introductory sessions interweaving technical and aesthetic elements included: visual elements (framing, camera angles, sequencing, pace, structure); discussions and critiques of students' exercises and of television; and hands-on work with cameras, lighting, sound and editing. Students' completed short visual exercises which were critiqued by the artist and classmates. Each student worked with the artist a minimum of two to three times a week for one to two hours. The introductory sequences were flexible--the length and content of each session were determined by the students' needs.

Recalling the beginning of the project, one student observed, "When [the artist] explained video the first day it seemed like it would be really hard. Then, the next day, we had all the equipment; he showed us how to use it--and it seemed like it would be easier because you saw how to do it instead of just [hearing about it]. Sometimes people make things seem more complicated than they really are."[6]

Initially students were "very stand-offish," towards the artist, and "afraid to get in front of or use the camera. I think that being the subject brings about a self-awareness of their problems and they are ashamed."[7] The power of commercial media's idealized images of perfection create expectations about self-image for all of us. By seeing themselves on video tape, students were confronted with the reality of their own body image.

For their first exercise, a "Polaroid Walk," students took several photographs which contained similar elements and arranged them in sequences. These sequences provided a framework for discussing visual concepts--composition, sequencing, framing, time, and developing an appreciation for each person's unique way of seeing. By using the freeze frame feature of video, the artist demonstrated that video is made up of a series of visual sequences of varied lengths. While some students were reluctant to photograph, others were excited and made several sequences. All of them were impressed with their success. Interestingly, the group with vision impairments, which one might expect to be hard to motivate, "jumped at every opportunity to photograph, and used up all the film."[8] It was the wheelchair students who needed encouragement.

---

[6] Anwatin student interview.

[7] Video artist, Vernon Norwood's daily log.

John, a visually impaired student, spontaneously arranged images from the "Polaroid Walk " into one long sequence.[9] He decided to make this sequence into a video tape and selected a sound track for it. With assistance from two students, John "slid his sequence past the camera lens at what he determined to be the proper speed. After two takes he got it. He was thrilled, everyone broke into applause."[10]

STUDENT WORK: EXAMPLES

The art of making video tapes empowered students to express their own ideas. In the process they were transformed from passive consumers of media to active image creators. Their works allow the viewer access to new points of view. Two tapes, Dancing and Rolling The Crowded Halls While Listening To A Korean Song are discussed below.

Dancing

Two boys whose main interest was performing rap music for the camera were not motivated to learn video production until they were encouraged to make a tape incorporating their interests. With the artist's assistance they developed and carried out an idea for a narrative breakdance tape. The boys planned, storyboarded, choreographed their dance and the breakdancers' movements, directed, and starred in Dancing. Through this process they learned to use narrative structure as well as the subtleties of camera angle, reversal, and cutaway creatively. Their initial reluctance to planning the tape dissipated as they began to realize the importance of telling their classmates how to shoot and edit the tape the "right way." Dancing was shot by a learning disabled student whose talent was recognized by her peers. She said of herself, "The reason

---

[8] Video artist Vern Norwood's daily log.

[9] Pseudonyms are used in this paper for students' names.

[10] Video artist Vern Norwood's daily log.

I'm good on camera is because I put my mind to it and said I was going to do it, and, I did."[11] The tape was edited by a girl who could only operate the editing board with her feet. During the project she discovered that she could think with images, and became interested in editing as a career possibility.[12] According to the boys, finding the right music for the tape was the most difficult part of the project. Rap music wouldn't work--they selected a polyrhythmic Caribbean/African beat to weave their dance and the breakdance sections together.

In the first segment of Dancing two handicapped boys with limited mobility dance outside. Their seemingly awkward bodies move gracefully through sequences and gestures choreographed for the upper body and arms. As the tape opens, one boy dances while the other looks on with admiration. After the admirer is invited to join the dance, the tape lyrically intercuts the two dancers. When one boy disappears behind a tree, the scene cuts to the back of an able-bodied breakdancer on stage The scene shifts back to the handicapped dancer, then to the able-bodied dancer spinning on stage. The handicapped dancers now sit in the audience. They are directors attentively observing and critiquing the breakdancer's performance. The transformation is complete--wearing sunglasses and hats, they display the affected gestures of directors who are stars in their own right. The stage physically separates the dancer from audience and, in this case, dramatizes the role of the directors as much as that of the performer.

In Dancing, the makers are stars--first as dancers, then as directors critiquing an able-bodied breakdancer's performance. This tape may express a wish for an idealized self capable of breakdancing. But, if these boys can't breakdance, they can direct the action, and, they know directors can be stars. Through video the boys were able to experience artistic empowerment by controlling the ideas and design of the production.

Excerpts from the storyboard for Dancing are presented on the following page.

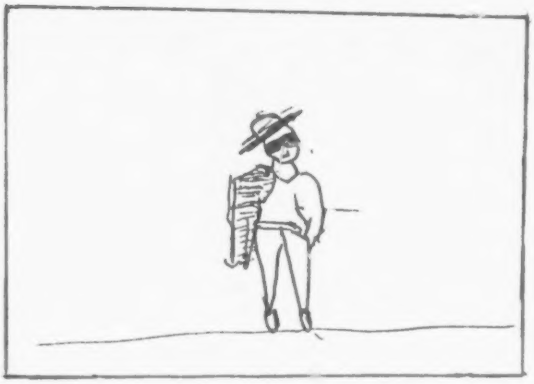
---

[11] Anwatin student interview.

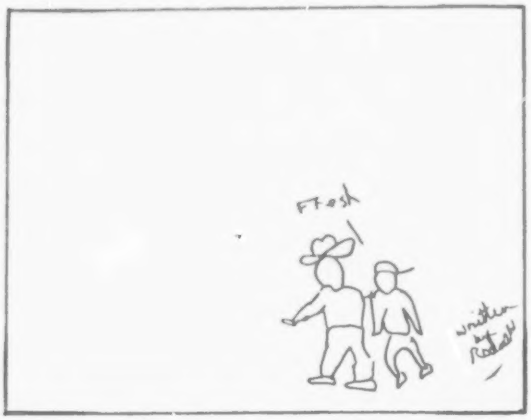
[12] Anwatin student interview.

SIX EXCERPTS FROM THE STORYBOARD FOR DANCING (arranged vertically)

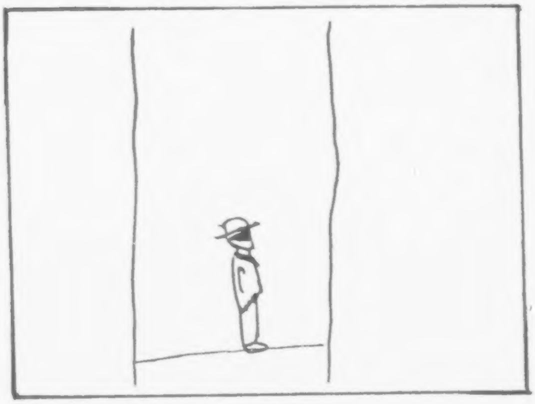
1. First Boy Dancing Outside



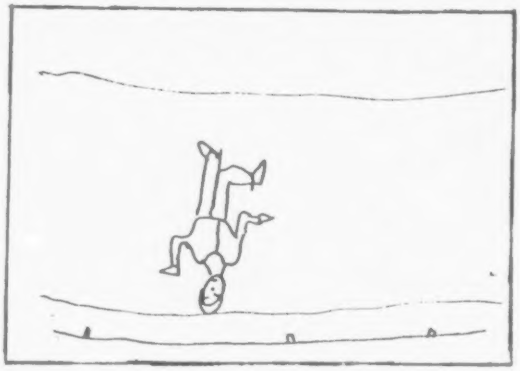
2. Both Boys Dancing Outside



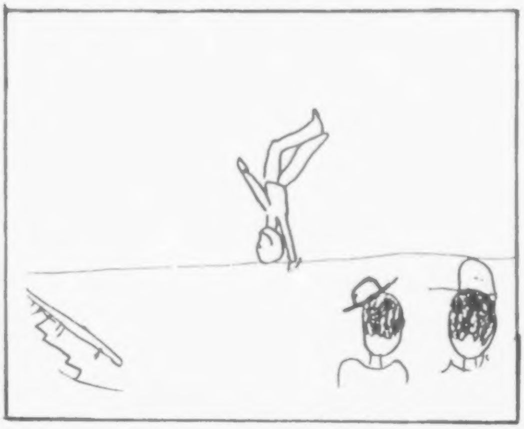
3. Second Boy Dancing Outside By Tree



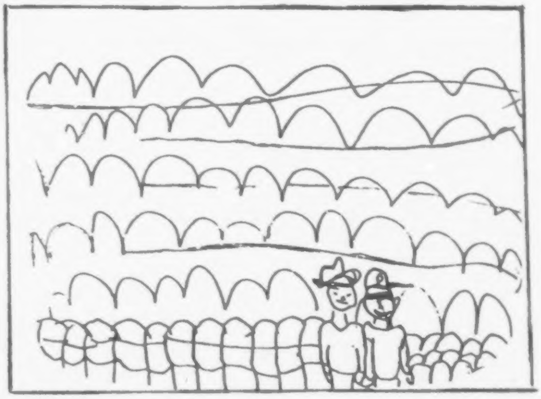
4. Breakdancer Spinning On Stage



5. Directors Watching Breakdancer



6. Reversal Of Shot #5



Rolling The Crowded Halls While Listening To A Korean Song

Rolling The Crowded Halls While Listening To A Korean Song was the result of a collaboration between two girls, Martha and Wendy. Martha is confined to a wheelchair, Wendy is an ambulatory student with learning disabilities and frequent school absences. Martha's limited upper-body coordination made it difficult for her to control the camera. Yet she was determined to make a tape which would give others a chance to see things from her visual vantage point. Martha and her friend Wendy worked together to develop the project concept. Their tape is about the visual and social experience of passing through the halls of the school between classes in a wheelchair. In order to convey this experience a camera on a tripod was mounted directly onto Martha's wheelchair. This allowed her to shoot the tape from her visual perspective. The sound track, comprised of acapella fragments of traditional Korean folksongs was developed and sung by Wendy. She selected segments which expressed her feelings about her life, Korea and her American classmates. These included playful children's songs, laments of lost lovers, the Korean national anthem and floating verses about friendship.[13]

The tape is presented in a three part structure which includes an introduction, journey, and commentary. It opens with a close-up of Martha watching a monitor as she pans the camera across the title of the tape. Because it was difficult for her to use the camera viewfinder, a monitor was set up to allow her to see what she was taping.

Throughout the journey, the wheelchair served as a natural dolly; the movement and speed of images and camera angle were controlled by Martha's movement. For example, close-ups were not accomplished by pushing the zoom button, but either by moving close to the subject or the subject moving close to Martha's wheelchair. The tape, shot from Martha's vantage point, places the viewer in her position. By reconstructing this experience, the viewer sees what the handicapped student sees as she moves through the halls: a waist-high view of peers and space; lack of eye contact with peers; social isolation; a sense of constant motion which is smooth at slow speed, jerky and somewhat discontinuous at faster speeds, and nearly dizzying as we round corners. Sometimes speed and movement are used playfully in this tape.

Suddenly the bell rings, the halls clear and Martha realizes she will be late for class. She increases her speed to get there faster and joyfully comments, "I've never gone this fast before." As the journey continues, Martha quickly turns, then slows down to move through an eerie, dark space--perhaps symbolic of the threats the handicapped may encounter. After another turn, we enter a well-lit space. The camera shifts to a close-up of a doorknob directly in her line of vision. As the door slowly opens, the camera pulls away to reveal Martha coming out of the door in her wheelchair. She looks directly at the camera and says, with a smile, "Now, that was a weird tape, wasn't it." This comment wryly anticipates the response of able-bodied viewers to what is natural in her life.

---

[13] Two days after the tape was completed, Wendy ran away from home.

EVALUATION

The results of the first-year pilot were significant, positive, and unique for each student. For some, overcoming the physical barriers of expression brough a whole new set of possibilities for the future. For others, such as the fourteen-year-old who suffered a stroke in a refugee camp in Thailand, a paraplegic girl, and vision-impaired students, media opened a route to expression and discovery which was not previously available.

Evaluation data indicated that teachers, artists, students and parents each found the project successful.[14] According to teachers and artists, the pilot helped students develop creative thinking skills, enhanced their self-esteem and confidence, and made them more willing to take the risks necessary to grow. It also placed responsibility on students' shoulders, and increased their contact with non-handicapped peers.

> "The pilot made immeasureable contributions to the self-esteem of handicapped students and the way they were regarded by their non-handicapped peers and school staff... They could do something others couldn't do."[15]

> "It developed creativity in a whole new way with little emphasis on words... developed flexibility in thinking instead of rigidity... and developed assertiveness skills. Students also got the feeling of successfully completing a project." [16]

---

[14] Evaluation data included artists' logs, project director's on site observations, interviews and questionnaires completed by students and teachers, and parents' observations. Documentation data includes video tapes and photographs in addition to students' completed works.

[15] Anwatin teacher evaluation, #2

[16] Anwatin teacher evaluation, #3

After a location shoot students were packing up to head back to school, behind schedule. One student said, "Oh, I bet the teacher will be mad at us for being late." The student who directed the shoot replied, "Well, if he is, I'll take care of that! I'm the director here."[17]

In addition, teachers reported that many students' performance in academic areas improved as a direct result of participation in the project.

> "The two most non-verbal students started to talk and interact more with the artists, the other staff, and me... The look on one student's face and her mother's face when they saw her video work at the School Arts Festival was worth a million dollars."[18]

Project activities enabled some parents to see new possibilities for their children. One students mother "could not believe her ears" when her daughter's audio work was played at the Anwatin School Arts Festival. She had never imagined her daughter could write poetry or use media at all, let alone in a creative way. Seeing their son's video was "especially exciting" to another student's parents who had been somewhat over protective. "It gave the parents the confidence to allow the student to try new activities and go on field trips which had earlier been seen as too dangerous."[19]

All of the students successfully participated in making video and/or audio works; what they enjoyed most or found most difficult varied with the individual. "Mixing and editing sound," "getting out into the community to do projects," and "using equipment for my ideas," were among the things they liked best.[20] The most important things they learned from working in media included self-esteem, creativity, and how to work with others. Student comments reflected these discoveries: "I learned I could do new things";"I can control my temper"; "I learned not to put people down for mistakes"; "I found out other kids are nice."[21]

---

[17] Video tape documentation.

[18] Anwatin teacher evaluation, #1.

[19] Anwatin teacher interview.

[20] Data from Anwatin students' evaluation questionnaires.

[21] Data from Anwatin students' evaluation questionnaires.

CONCLUSION

The first year of the pilot successfully demonstrated the feasibility of using electronic media to bring arts education to physically handicapped and learning disabled adolescents. In the second year of the pilot, FITC is refining its pedagogy and working with more severely physically impaired students, including symbol-users who communicate with the Bliss system. Computer graphics are being adapted and we will continue to explore the new possibilities for using audio and video with handicapped youth. In addition, teacher in-service will provide opportunities for educators to develop and implement media activities in their classrooms. The goal of this multiyear pilot project is to develop a successful model for adapting equipment and teaching media as an art form to handicapped students.

"Visual Processing": Using Computers to Do for Visual Literacy Instruction What Word Processing Can Do for Writing Instruction

by

TILLMAN J. RAGAN
&
LANDRA L. REZABEK

Introduction

Seymour Papert, educational theorist and creator of the computer "environment" known as LOGO, envisions personal computers as the pencils of the future. As Papert (1980) notes, "Pencils are used for scribbling as well as writing, doodling as well as drawing, for illicit notes as well as for official assignments" (p. 210). Papert's observation indicates that computers will assume a role in both verbal and visual communication and suggests that computers will play a part in the processing of ideas as well as in the generation of final products. This paper explores the potentials of computer use in visual literacy instruction from the standpoint of an analogy between generation of verbal and visual messages and the technological support of word processing and computer-generated visuals. Our thesis is that computers can offer learners powerful assistance in their study of certain visual literacy skills, and that the assistance offered can be analogized to the assistance which using a word processor gives to a person involved in the study of writing.

Computers and Writing Instruction: Process and Product

Advocates of the "process approach to writing" stress that writing is an iterative task of formulating ideas into words, revising drafts, reformulating ideas and reworking drafts, and finally producing a finished product. The physical tenacity and energy involved in the writing task itself, however, often frustrates students. Watt (1984) notes that using a computer to reduce the physical effort of writing fosters the process orientation to writing:

> Whether a beginning writer uses pen, pencil, or typewriter, the physical effort involved in writing and revising text has been a major barrier to learning to write fluently and effectively. With an ability to simplify the creation, revision, and correction of text, the computer can reduce such difficulties and usher in a new age of writing instruction. (p. 75)

The particular strengths of word processing for people learning to write include greater ease when initially creating text as well as the ability to make changes, both minor and major, with a significant reduction in the physical burden involved. Since production of words on paper by those who are learning to write is not a simple task, the reduction of effort required to create and then make changes in what one has written which a word processor offers is an important facilitator in improving one's writing skills.

Among the behaviors exhibited by most good writers is the act of making revisions. Part of the difficulty of getting learners to practice making revisions, and thereby learn to analyze their own writing and make revisions with fluency and frequency, is the difficulty in making "neat looking" copy after having made one or more revisions. Either writing by hand or typing requires re-producing the entire document for each round of revisions. Word processing relieves the writer of re-producing. One may insert, delete, and rearrange as much as one wants, and when another copy on paper is desired, the computer's printer does the work of producing the copy. Thus, computers offer advantages in both the process and production aspects of writing instruction.

One assumption upon which our argument rests is that learners are already somewhat familiar with the elements of the verbal language which they will be manipulating (i.e., letters form words which form sentences which form paragraphs which form essays, etc.). Another assumption is that learners will possess or will acquire the prerequisite skills necessary to utilize the word processing programs (i.e., minimal typing skills and the basics of microcomputer utilization.) With these assumptions met, learners will be able to experiment with the elements of verbal language and produce not only "neat looking" finished copy but also a written product of higher substantive quality more easily with the aid of word processing programs than could be accomplished with handwriting or typewriter.

Word processors offer writers an opportunity to reduce the physical effort required to create, revise, and re-produce verbal communication; yet, some authors find computer technology limiting. Part of the writing process valued my some authors is that which occurs when authors actually "see" coherent ideas emerge from scribbles on a yellow pad. Authors enjoy "seeing the stuff worked out" on paper. Neatly revised and re-produced computer-generated copy denies the writer this feedback. Some writers say they like the "feel" of the pencil. Others cite physical limitations associated with computers, lamenting that one cannot curl up on the sofa with a computer on one's lap as can be done with a pen and pad. Still others complain that the computer screen displays only a portion of text at a time and that finished pages are difficult to envision. Although these latter two concerns of physical bulk and page representation are being overcome by advances in technology, paper and pencil is still the method of choice for some writers.

Visual Processing with Computers: Limitations and Strengths

Computers have their limitations, both as word processors and as visual processors. However, most of us are more familiar with the strengths of word processing and the limitations of visual processing than we are with the limitations of word processing and the strengths of visual processing. A well-known limitation of computer graphics has to do with its resolution. Although getting better and better, computer images do not as yet provide the detail and smoothness obtained more or less automatically when using a pen on paper. Another limitation is in ergonomics. Despite all the high tech in the world, a pen or pencil working on paper is easier for the hand to manipulate than devices attached to computers, even when those devices attempt to emulate a pen. Light pens, used to create visual images by drawing directly on the computer screen, must be used in an awkward, vertical manner and remind one of the difficulties of drawing on slippery surfaces. The mouse, a frequently used peripheral, is a palm-sized device which provides position information to a computer as a result of the users' pushing it around on the table top. When a mouse is used for pointing and selecting functions from a screen, the mouse is a marvelously quick and efficient tool. But when used for freehand drawing it affords the the user the same ease and comfort as "drawing with a block of wood" (Ragan, Belland, & Smith, 1986). Computer-generated visuals can also be produced by those skilled in the use of computer programming languages, but this process is time-consuming and the results are often disappointing, especially for the beginning student.

The limitations of personal computers for graphics work have led much of the visual literacy community to avoid them completely, particularly those of us who approach visual literacy from an art or graphics arts background. Rather than deny the limitations, we would like to explore ways in which visual literacy goals interact with what computers can do **well.** Our central point in this regard is that the computer's capabilities which allow one to adjust and revise one's work, engage in precision activities, duplicate images and image elements, activate memory capabilities, and manipulate images provide more than ample compensation for limitations of resolution and ergonomics, if we build upon these strengths.

A report of the uses which high school art teacher Ken Kary's students make of Apple Macintosh computer technology when designing jewelry capsulizes many of the computer's strengths in facilitating visual processing:

> Students can start with a simple shape and then manipulate it by stretching, shrinking, flipping, adding and erasing lines, drawing lines thicker or thinner, duplicating patterns, filling in areas, and so forth. This means that using the Macintosh to create dozens of experimental designs takes significantly less

> time than sketching them by hand. The point is that students wouldn't draw as many designs by hand; the computer allows them to do far more experimenting and intuitive learning.
>
> According to Kary, using the Macintosh helps his students visualize ideas more quickly, which in turn broadens the "design vocabulary" and makes them receptive to more complex shapes and designs (Apple, 1986, p. 6-7).

As demonstrated by Kary's students, the graphics capabilities of computers facilitate processing and production of visual materials in much the same way that the word processing capabilities of computers make creation, revision, and re-production of verbal messages almost "painless". Graphics software packages enable learners to experiment with basic elements of design: line, shape, texture, and space. Color and volume can also be achieved utilizing particular types of hardware and software. Principles of design — simplicity, unity, emphasis, and balance — may be used in the production of computer-generated visuals just as they are in the generation of pen and paper visuals.

As is the case with verbal processing, the major difference in the visual domain between processing ideas with a pen and processing them with a computer is most apparent during the revision and re-production cycles. Drawing and erasing with a computer isn't messy — it leaves no rubber pieces and no tell-tale smears or worn-away pages. As with using computers in verbal processing, using computers in visual processing lessens the physical demands made upon the learner during revision and re-production activities and increases the likelihood that the learners will correct errors and make improvements in the visual message.

One of the lessons learned from the teaching of composition may be applicable to visual literacy as well: that it is not just the making of revisions that helps writing quality, it is the willingness to make major revisions. Writing benefits from critical review of a draft followed by deletion of whole paragraphs and even sections and adding in whole new paragraphs and sections. In drawing, it is frequently relatively easy to make small changes. But to make major ones, such as moving an entire section of a drawing from one location to another in the drawing, is virtually impossible without re-drawing the whole thing. Macintosh software packages, such as MacDraw and MacDraft, are examples of the support for making major revisions which the computer offers.

Utilizing computers for visual processing and production is beneficial when precision is desirable. Word processors can enable learners to set precise margins and justify lines of text to-the-letter, and end up with copy that is neatly typed regardless of the number of times the work has been revised. Visual processing capabilities of computers afford learners ease of processing and producing straight lines — vertical, horizontal, parallel, or perpendicular; circles, arcs, ovals, hexagons, and so forth. Visual images can also be placed — and re-placed — in exact locations on the screen or page. The learner is relieved of much of the tedium of measurement and alignment.

Another potential benefit of visual processing is that images or image elements can be duplicated. The "copy" option available in word processing programs is also a function of visual processing programs. In the Macintosh system, a metaphor of working with materials on a desktop is employed throughout the computer's operating system. To take all or any part of a visual from one document or "page" and duplicate it in another is accomplished through steps labeled "copy" and "paste." The electronic copy and paste process is almost instantaneous and works with both text and graphic material.

The memory capabilities of visual processing programs also function in much the same way as those of verbal processing programs. Images or words from one document or visual can be retrieved, transferred to another document or visual, and stored. In addition to the copy and paste functions described above, visuals may be subjected to an electronic "cut and paste" process as well. Terms such as "cut and paste" and "electronic clip art" clue those of us more familiar with traditional graphics techniques as to what is "magically" transpiring within the computer. Some computer software even enables us to merge textual and visual information into one message.

Just as we can alter and edit text by transposing words and moving paragraphs, we can also manipulate visuals by rotating or moving images or elements of these images. Images can be made to overlap and conceal each other; mirror images can be created; images can be drawn in perspective, skewed, or distorted; and manipulations in size can also be made.

The benefits offered by computers in the areas of revision, precision, duplication, memory, and manipulation of images indicate their potential impact for visual skills instruction. As Fransecky and Debes (1972) indicate, a "triad" of key terms associated with the processing of visual information acknowledges the important role of technology in the development of visual skills:

> **Visual literacy** is the attribute we would hope to find in every well-educated adult in our society. **Visual communication** is what the person is exposed to, or when appropriate, uses himself. **Visual technology** is what makes "written" visual communication possible, and changes in visual technology alter the character of visual communication (p. 8).

The advent of computer technology can, and indeed has, altered the character of visual communication. By facilitating visual processing in ways analogous to those in which word processors encourage verbal processing, graphics capabilities of computers offer new avenues for visual literacy instruction.

The development of a comprehensive curriculum for visual literacy instruction using computer technology is an area for further research, and such a curriculum will be continually modified as capabilities of the technology increase. Even without the benefits of an established curriculum, computers presently afford learners opportunities to take advantage of some technological support during the processing and production of visuals.

A Few Examples

Examples of computer support of visual literacy instruction and skill development range from the elementary to the elaborate. Three very basic programs which we have seen utilized in elementary school settings are Print Shop, City Blocks, and Cartoon Maker. These programs will operate on the Apple II (and in some cases others as well) microcomputers most likely to be found in elementary and secondary school classrooms. Each of these programs involves learners in the processing and production of visual messages. Each involves the learner in the selection and arrangement of appropriate visual images from a variety of electronic clip art available. Print Shop and a similar program, Card & Party Shop, afford learners opportunities to supplement visuals with verbal messages to create greeting cards, banners, stationery, and signs. Cartoon Maker allows the combination of visual and verbal messages, and additionally involves **sequencing** the visual messages, an important aspect for visual literacy goals. Learners can also use two additional programs, Create with Garfield and Comic Strip Maker, to achieve similar results. City Blocks allows learners to experiment with the visual principles of space, balance, and unity while manipulating clip-art buildings to make towns. All of these programs will produce hard copy of the students' work.

A more sophisticated application of microcomputers in visual instruction is possible with the Apple Macintosh, which Kary's students used to design and re-design their jewelry projects, as noted earlier. Software for the Macintosh such as MacPaint, FullPaint, MacDraw, MacDraft, and Mac3D are examples of programs which we have in mind when we stress the strengths of revision, precision, duplication, memory, and manipulation associated with the graphics capabilities of computer technology. Software which takes greater advantage of the capabilities of computer hardware in the generation of visuals is continually improving. It is when using these more sophisticated examples of computer technology that the parallels between visual and verbal processing are most apparent. The more elementary programs such as Print Shop afford learners opportunities to engage in visually-oriented activities such as selection, arrangement, and manipulation of images. But it is the more sophisticated programs which offer greater flexibility and opportunities for learners to create and modify their own images.

Visual Processing: A Quandary

Visual processing capabilities of computers offer learners benefits of revision, precision, duplication, memory, and manipulation in comparison to more traditional methods of visual design and production. Why then, are computers not utilized more frequently in the instruction of visual skills? Economics, obviously, plays a role in the availability of computer hardware and software and its subsequent use during instruction. However, a degree of our hesitancy to incorporate computers may lie in the tendency for us to teach as we have been taught. Those of us coming to the field of visual literacy from an art or graphic design background may believe there is some intrinsic merit in using a t-square or template to generate visuals. We may believe there is no more powerful tool than pencil on paper. And we may be right. We may also be concerned that computer technology makes the processing and production of visuals "too easy." We may be worried about substituting technology for discipline and/or talent.

Technology is helping people with mediocre skills in visual communication to create, revise, and produce images which they would not or could not produce otherwise. Most people don't have the talent or the patience to develop the skill which has been required to excel in visual communication in the past. And we may also be concerned about preserving and fostering imagination and creativity in an environment where stereotypic, cliche, stock images are readily available.

These are all legitimate concerns. However, we will do well to recall Fransecky and Debes' (1972) caveat that "changes in visual technology alter the character of visual communication" (p. 8). Computer technology has the potential to enable a wide variety of learners to create, revise, and produce visuals in ways which have not previously been possible. Computer technology can offer learners invaluable assistance in their acquisition of certain visual literacy skills and has impacted visual communication in ways analogous to the influence of word processing on writing instruction. As advocates of visual literacy, we must continue to investigate the potentials and applications of computers in the realm of visual communication and to incorporate the strengths of the technology into visual instruction.

References

Apple Computer, Inc. (1986, April-June). Meet the new Macintosh artists. Apple Education News, p. 6-7.

Fransecky, R. B., & Debes, J. L. (1972). Visual literacy: A way to learn — a way to teach. Washington, DC: AECT.

Papert, S. (1980). Mindstorms. New York: Basic Books.

Ragan, T. J., Belland, J. C., & Smith, M. A. (1987). Using the Macintosh and Laserwriter: A case study in visual/verbal productivity. Elsewhere in this volume.

Watt, D. (1984, January). Tools for writing. Popular Computing, pp. 75-76, 78.

Software References

Card & Party Shop, Bantam Software/Walt Disney Personal Computer Software. $39.95.

Cartoon Maker (in Microzine #14), Scholastic. $39.95.

City Blocks (in Microzine #7), Scholastic. $39.95

Comic Strip Maker, Bantam Software/Walt Disney Personal Computer Software. $39.95.

Create with Garfield, DLM Educational Software. $29.95.

FullPaint, Ann Arbor Softworks. $99.95 (for Macintosh)

MacDraft, Innovative Data Design. $239.00 (for Macintosh)

MacDraw, Apple Computer. $195.00 (for Macintosh)

MacPaint, Apple Computer. $125.00 (for Macintosh)

Mac3D, Challenger Software. $195.00 (for Macintosh)

Print Shop, Broderbund Software. $49.95

Acknowledgement: We would like to thank Barbara Blake and Terri Cook of **Teachware** for assistance in providing certain items of software for the presentation: P.O. Box 94365, Oklahoma City, OK 73143 (405) 799-8156, 794-3748

Thanks to Cherrie Birden, Kennedy School, Norman Public Schools, for providing some "field tested" software recommendations.

Learning Styles and Instructional Technology

by

BARBARA DUFFY

There are times when every teacher feels that it is impossible to reach all the children, that he or she is doing all it is possible to do, but that still isn't enough. There are children that they can't even reach, much less teach. It is easier to reach the children when they feel that the teacher cares about them. A demonstration of this is the use of learning styles in the classroom. Students may consider this approach a sign that the teacher does indeed care (Dunn and Dunn, 1985).

And certainly, the teachers may feel that this is just more work to add to already overloaded schedules. However, they don't need to do it alone. They can work with fellow teachers, with administrators, and they can involve the students themselves. Additionally, they already have an important tool in the classroom. They can use instructional technology, or media.

Working with others creates synergy. Synergy can be defined as a compounding of energy, or more simply, one working alone equals one, but two working together can equal the creativity of three of four working alone. This is illustrated with the simple concept of brainstorming. In brainstorming sessions, ideas are generated without restrictions. Often, ideas which would have been ignored otherwise are found to have merit.

These interaction processes are very much a part of learning style, and they can be used in almost any classroom. A simple aid in such sessions is the overhead projector. It can be used to record ideas generated as the teacher watches and interacts with the class.

Instructional technology has made and will again make many contributions to learning styles in the classroom. The technology currently available can save the instructor time and stress. Its use can be smooth and convenient. Technology or media is available to reinforce learning through each modality of perception. This can be done in a structured fashion or casual, random or sequential. It can be used to help students learn both globally and analytically. We will hear more about these areas later. Students who like to work alone can use media, as well as those who prefer to work in small or large groups, with peers or people of all ages. Media can provide concrete experiences and opportunities for reflexive observation. It can aid in learning basic skills and in developing higher order thinking.

With all these in mind, let's begin with modalities or perceptual strengths--tactual/kinesthetic (TK), visual, and auditory.

We learn best through our dominant modality. Reinforcement is delivered through our secondary modality. For example, tactual/kinesthetic students learn best by TOUCHING, FEELING, or having MUSCULAR INVOLVEMENT in a project.

Visual students first need to SEE something, while auditory students initially need to HEAR something (Dunn and Dunn, 1978).

According to Dunn and Dunn, there seems to be a progression through these modalities. Young children are generally more tactual/kinesthetic, then they become more visual, and later more auditory. In the general population, and particularly with younger children, auditory strengths are rarely dominant. Thus it is imperative to keep auditory presentations minimal. Additionally, as younger children are often more tactual/kinesthetic than visual, it may be necessary to keep visual presentations shorter.

To tentatively identify the dominant modality of a student, the expert teacher may use casual observation along with a checklist of modality traits. For more sophisticated and accurate identification, use of a learning style inventory is recommended.

For each type of student there is a series of events through which they learn best. The first part of an assignment for a tactual/kinesthetic (TK) learner should include a hands-on project, such as playing a learning game. The TK student should (1) read the assignment, (2) hear the teacher lecture or take part in a class discussion, (3) watch a film, filmstrip, or videotape, and (4) do a hands-on, creative project, such as inventing a board game or body game, learning circle, task cards or electroboards (Dunn, R., Spring 1985).

For the more advanced student another creative possibility is helping to make a slide program, filmstrip or videotape, or even creating another project.

Please note: The TK student may find reinforcement in TAKING NOTES while reading or listening to a lecture or tape.

A few tactual students may demonstrate a talent for using audiovisual equipment, and perhaps even repairing it. Both can be helpful learning experiences, and can lead to an improved self concept.

On the other hand, for the greatest success, the visual student should (1) read the assignment, (2) listen to the lecture or view and listen to a visual presentation. For secondary reinforcement, this student should (3) TAKE NOTES, (4) record them and play them back until the important points are easily recalled. The final step for the visual student is to participate in a hands-on project which can include (5) writing a summary of the lessons, (6) writing a script for a visual program and actually drawing the filmstrip or producing the slides. An alternative for the more sophisticated programs and students would be production of a videotape.

The auditory student should (1) hear the teacher lecture and/or listen to cassette tapes, records, radio, or a discussion before following up with (2) reading and (3) visual reinforcements. Auditory students should (4) take notes only after the original auditory message is received, because notetaking distracts them while listening. These students can then (5) make a cassette tape by recording the major points and playing them back until they remember the points without using notes (Dunn, R., Spring 1985). The auditory student can be creative by (6) making audiotapes or producing the soundtrack for the presentations made by the visual students.

When students have trouble learning to read, use cassette tapes which have been recorded from books. Students should read the book and listen to the tape at the same time. Word recognition comes soon after such methods are begun (Carbo, November 1985). When recording books on audiotape it is important to record at a slow pace, to use short phrasing and to speak with much expression. To be more effective, recorded books should be above the student's reading level, and on, close to, or even somewhat higher than the youngster's language comprehension level.

Additional helps for students learning to read are recording phrases from a story on cards for the language master, and printing the phrases on the cards. The cards move along the track in the language master and the student reads the sentence, with the audio on the recording strip repeating the sentence at the same time. This reinforces word recognition (Carbo, Dunn and Dunn, 1986).

When students are having special problems, make short recordings for them each day, two to three minutes in length. These should meet the student's needs by recording slower or faster with shorter or longer phrasing. The students may then listen to and read the recorded portions over and over again until they can recognize and pronounce the words, and read the sentences back to the teacher.

When the recording is just right the student should be able to read back the recorded section after about two or three repetitions with the book and tape, with no more than two or three errors. If the reading is halting, or many mistakes are made, there may be a problem with the recording. (Carbo, January 1985).

Another type of technology, the computer, is currently available for student use in most schools. A general profile of the consistent computer user indicates little need for mobility with a dominant visual modality and a secondary tactual modality (Dunn K., March 1985). If a tape or voice synthesizer is used, the auditory student will also be more inclined to use the computer.

The computer-oriented student will probably prefer formal design, and will be analytical and sequential. Most computer programs are currently based on sequential processing. Some students may prefer to work alone, but research shows that working with peer groups is a popular way to approach the computer (Dunn, K., March 1985).

Earlier we mentioned learning and reading style inventories. Several have been programmed for computers. Students may take a whole inventory sitting at a computer, and the teacher may even keep the records on one for easier access. Pencil and paper inventories are available for students who prefer not to use a computer, or for whom computers are not accessible.

A new technology coming into use in some schools is interactive video, which is a combination of computers and video designed to give students the facilities to receive both instruction and feedback in a sophisticated manner. Indications are that it will be much used in the future. Interactive video appeals to the tactual, visual, and even the auditory modalities, because all are used with this system. Interactive video can also be used to help students learn methods of logical thinking and strategies of problem solving. The cognitive learning process is greatly benefited by this technology, as advancements are constantly pushing to new frontiers.

Another important aspect of learning style is structure, of which various students need differing amounts. Some require many and definite guidelines. Others are able to function well with very few guidelines (Dunn and Dunn, 1978). Instructional technology helps the teacher provide for these different needs by allowing both large group instruction and individualized instruction to take place all at once. This happens by keeping students who need more structure in the large group, showing a film or videotape and providing guidelines. Students who need less structure listen to tapes, watch visuals, and advance at their own individual rates.

Need for structure is integrated into several learning style types. For example: The concrete sequential students are practical, predictable, organized and structured, and prefer hands-on activities (Butler 1984). These students like to work with computers and computer-assisted instruction. We may find that they will also like to use interactive video as it becomes more common in the schools.

A hands-on media activity for a concrete sequential (CS) student could be building a volcano using colored, layered transparencies to show the parts. Another learning style type is the abstract sequential. AS's like to work with ideas in an orderly fashion. They are intellectual, logical, conceptual, rational and studious. They like to use records, slides and tapes, and prefer documentaries.

The abstract randoms (or AR's) compose a third learning style type. They like IDEAS, and they may be very creative. They are considered emotional, interpretative, sensitive, holistic, and thematic. AR's enjoy all types of instructional technology.

The fourth learning style type, the concrete randoms (or CR's) have a style that characterizes them as original, experimental, option oriented, and risk taking. They use visual, verbal, and mental imagery to solve problems, and make excellent cinematographers. Thus, they will enjoy creating videotapes, films and filmstrips as class projects (Butler 1984).

The analytic and global aspects of learning styles are recognized as being important factors in the learning process (Carbo, April 1986). Analytic students like to work first with the small pieces of a project before putting them together, while global students prefer to see the whole picture before breaking it down into parts (Dunn and Dunn, 1978).

Research shows that young children tend to be global until around ages seven or eight. This indicates a definite need to begin with the whole word, the whole picture, the whole story, when teaching young children (Carbo, April 1986) (Dunn 1978). To help with this, use software in any format that gives an overview or summary, that shows the whole before it demonstrates the parts. On the other hand, when teaching the analytical student, use software that demonstrates the components or parts before summarizing the concept.

Any use of instructional technology should include an introduction and a follow-up which tie it in with the current lesson or unit. Used this way it can be an excellent resource and tool.

When the lecture-discussion includes use of technology, teachers should stop the equipment at development points to ask pertinent questions concerning the material just seen. If students have not retained this information, back up and show that segment again. Repeat the questions before making the decision about reviewing or proceeding.

A word of caution: Any testing should be done in the same general format in which the lesson is learned best by the student. If the student prefers to report orally, either in person or on cassette, the final test should be oral. If the student prefers to write, the final exam should be written. If the student prefers hands-on work, the final exam can be a project which demonstrates a knowledge of the subject.

A completely different type of learning, guided imagery, is becoming accepted as an excellent method for placing students in their most productive learning mode. What is guided imagery? It is a kind of mental calisthenics, or exercise, that helps students get rid of outside distractions and believe that they can, and are succeeding.

There are three categories of guided imagery--cognitive, affective, and transpersonal. In the cognitive, a teacher begins the lesson by having students close their eyes and imagine themselves as photographers taking pictures of things and situations they like and dislike. After photographing them, students draw what they photographed (Galyean, March 1983).

In affective imagery, through a similar technique, students change negative learning images to "can do" pictures of themselves succeeding.

The transpersonal imagery promotes awareness of self through the use of symbols like light, fire and gold, and again, students are directed to draw or talk about what they have experienced.

Guided imagery is used both as preparation for learning and as course content. It helps students achieve a state of relaxation and concentrated focusing before they begin the daily lessons. While the teacher may lead a whole class, small groups might also use an audiotape, which has been prerecorded by the teacher to achieve the desired results. Appropriate background music with the guided imagery can be most helpful in achieving the desired goals (Galyean, March 1983).

We have discussed examples of several different learning styles and have come to know that each individual learns best in his or her own way. Knowing this, you can, as an effective teacher, get inside each student's own individual world. Once there, you can relate better to that student and the student, in turn, can relate better to you, and to the subject being taught. That's what effective schooling is all about--being a good teacher and helping students be greater achievers.

REFERENCES

Butler, Kathleen. Learning and Teaching Style, In Theory and In Practice, Gabriel Systems, Inc., 1984.

Carbo, Marie. "Advanced Book Recording: Turning It Around for Poor Readers," Early Years, January; 1984, p. 46-48.

Carbo, Marie. "Global/Tactual Learners: How To Teach Them Reading Skills," Early Years, April; 1986, p. 47-50.

Carbo, Marie. "Recorded Books = Remarkable Reading Gains," Early Years, November; 1984, p. 44-47.

Carbo, Marie; Dunn, Rita; Dunn, Kenneth. Teaching Students to Read Through Their Individual Learning Styles. Prentice Hall, Englewood Cliffs, N.J., 1986.

Dunn, Kenneth. ASCD Speech, March; 1985, Chicago, Illinois.

Dunn, Rita and Dunn, Kenneth. Teaching Students Through Their Individual Learning Styles: A Practical Approach. Reston Publishing Co., Inc., Reston, Va. c 1978, p. 431.

Dunn, Rita. "How to...Learn/Remember...New/Difficult...Information/ Skills...Effectively." Learning Styles Newsletter, Spring; 1985.

Galyean, Beverly-Colleen. "Guided Imagery in the Curriculum," Educational Leadership, March; 1983, p. 54-58.

Oklahoma State Department of Education. "One of a Kind: A Practical Guide to Learning Styles." 1983.

Oklahoma State Department of Education. "The Marvelous Mix: Learning Styles and Instructional Technology." Video; 1986.

Visual Arts Index System

by

DOUGLAS MARSCHALEK

The instruction of studio art, art appreciation, art history, museum education, architecture, and other visual arts has steadily improved over the last fifty years due to the availability of art reproductions, first in the form of black and white slides, then color slides. Yet for most arts students, a small amount of art is viewed when considering the vast collections of art possessed by private and public collectors.

We are entering an age of a visual renaissance in the Arts. In the past thirty years, television has increased our knowledge of the world, its people and the events that shape it. The availability of an incredible number of different types of visual images will occur in the next few years due to the laser disks. Just three years ago, laser disk technology was beginning to surface from the laboratory and into production. Today prerecorded music on compact laser disks can be purchased for $8.00 and played on a $100.00 laser player. The development of the laser disk is also a major break through for the visual arts. Presently, a substantial resource of art reproductions is being developed with the use of the new videodisk technology. For example, the Metropolitan Museum of Art, National Gallery of Art, Hague Museum, Louve, George Eastman House International Museum of Photography (60,000 photographs), Guggenheim, Hellen Allen Textile Collection (U.W.-Madison), Vincent Van Gogh: A Portrait in Two Parts, and the Library of Congress are in the process of storing their collections on video laserdisks.

A twelve inch disk can store 108,000 still frames of art reproductions or an equivalent of 50,000 pages of text information. The disks can be produced with: 1) still frames of each picture, 2) a series of frames that make up motion, similar to film or VCR, and 3) two separate sound tracks for two levels of verbal information about the images found on the disk. The disk is played on a laser disk player and the picture is displayed on a color television or monitor. The still frames or the frames for motion can be accessed through punching a series of numbers into a key pad;

within seconds the chosen picture is displayed. The access or search procedure for a picture is the same as selecting a station on your television set with a remote control device.

Visual Art Index System

What can the National Gallery of Art provide for the art teacher, art historian, or the museum educator? The disk contains three separate projects: a history of the museum and its collections, a tour of the museum and its galleries, and 1,645 still frames of their collection with some close-up views of the art objects. Each art reproduction is followed with information concerning the frame number, artist name, nationality, title, media, and the completion date of the art object. An alphabetized listing of the artists, their work, and a frame number for each reproduction accompanies the disk in a printed format.

The selection of art objects from the 1,650 reproductions for other considerations than just the artist becomes rather difficult. Under development is a Visual Art Index System (Marschalek, 1985) which allows access to any of the reproductions on the disk through identifying 1 to 27 fields:

Frame Number
Artist
Gender
Type
Line
Color
Value
Intensity
Light
Shape
Form
Space
Surface
Pattern
Structure
Unity
Emphasis
Complexity
Media
Process
Theme
Subject Matter 1
Subject Matter 2
Purpose
Period of Art
Meaning
Date of Art
Object

Each field above contains key words or attributes, for example:

Color
monochrome
analogous
primary
secondary
triad
complementary
cool
cool warm
earth
naturalistic
random

Light
flat
ambiguous
atmospheric
diffused
naturalistic
luminescent
reflected
light shadow
light dark
highlight
chiaroscuro
sfumato

Space
flat
shallow
overlap
stacked
reduction size
deep
perspective early
perspective one point
perspective two point
perspective three point
perspective nature
foreshorten
distorted
ambiguous

Corner Stone software (Infocom), a date base software, is used to create the fields and attributes. Art reproductions can be sorted by any combination of the specific fields and their attributes. The use of the F1 key (help) allows the novice to know some of the attributes of a field that can be used in a picture search. The Art Index system can provide some or all of the information about each art reproduction. If the frame number is the only desired information needed from the search, then the user can locate the pictures on the laser disk with a remote control driver. If all of the information from the fields is important to the user, this information can be retrieved through the Corner Stone soft ware; the index system becomes a tutorial. The field designate, Meaning, provides a short explanation of how the elements of art and principles of design are used, or how the subject matter is interpreted in the work of art.

The Visual Arts Index System is an important departure from data base index systems employed by art museums and libraries. The index system is not a catalog system, rather it is a system which allows individuals who are familiar or unfamiliar with certain forms of art to access and use laser disks for instruction and study.

In the very near future, the number of images available for study will be vast, and affordable. The cost for each art reproduction of the National Gallery of Art Disk is about $00.05. The study of art can be broader in scope than ever before. It may be possible to have at hand most of the world's art, western and non-western art. The latest disk projects are taking advantage of multiple views of art objects, close-ups of two dimensional art and different points of view for three dimensional art. The study of art is entering an age of visual renaissance.

Video Disks of Major Art Collections

The Creative Camera. (Video Disk) (1983). New Jersey: Pioneer Laserdisc.

National Gallery of Art Videodisk. (Video Disk) (1984). New York Videodisk Publishing; Cincinnati: Vidmax. ($100.00)

Vincent Van Gogh: A Portrait in Two Parts (Video Disk) (1982). New York: North American Phillips. ($130.00)

References

Anderson, F. (1985). Electronic media, videodisc technology, and the visual arts. Studies in Art Education, 26 (4), 224-231.

DiBlasio, M. (1983). If and where to plug in the computer: A conceptual framework for computer assisted art instruction. Studies in Art Education, 25, (1), 39-47.

Marschalek, D. (1985). Visual Art Index System. Project Trochos, IBM Advanced Education Project.

Equipment for Laser Disk

Pioneer Laser disk player, Constant Angular Velocity (CAV) ($600.00 - $900.00)

Color Television or color monitor (Analog) with video input or video attachment of VHF antenna

Equipment for Visual Arts Index System

Corner Stone Software (Infocom) ($95.00)
IBM PC or compatible computer

Visual Literacy Across the Curriculum

by

LAVERNE MILLER

We hear a great deal these days about "Writing Across the Curriculum," a program which tries to enlist the aid of teachers outside of English departments to give writing assignments to students in such subjects as chemistry, history, business, etc. Thus far its success is not known.

It would seem to be just as important to introduce the concept of visual literacy across the curriculm -- in which visual literacy as a means not an end is introduced in a variety of subject matter fields. Observation is the basis of science and science students should be taught to observe keenly; but it appears to be equally important to teach students to be more observant and visually perceptive in every subject, not only to enhance their skill at seeing but to help them in arriving at conclusions or in making deductions from what they observe. The pleasure of being sharp-eyed cannot be underestimated; however, it is not restricted to science and art students. It is for everybody.

There are many disciplines which lead naturally to the conscious encouragement of visual literacy -- especially in laboratory sciences. However, what I propose to describe here are some examples from the humanities and social sciences. My experience deals with integrating visual literacy into courses, English as a Second Language, which includes on each proficiency level a component in visual literacy that stresses "reading" film, pictures, signs, symbols, or electronic messages on TV. Reading visuals is a basic survival skill in our culture. Over each semester out of six in sequence the students learn to look perceptively at, and write about, films. They are exposed to multiple visual stimuli from slides to video in classes and in our community college Learning Laboratory. They do drills with tapes and media that assist language acquisition and vocabulary building. Being perceptive in the supermarket and the drugstore in order to achieve good consumerism is taught through films and role-playing. The students in teams of two or three write their own short scripts and act them out in the video studio. Thus they learn not only to read the visual medium but to "write" in it via video. Most important, they get to see themselves, to evaluate their own language development, to compare tapes and analyze their own, and other students' body language, prounciation, and thinking skills. Analysis by looking at the body language of a different culture is valuable in social intercourse but especially in business. A student's career might be affected negatively or positively depending on his/her body language, or how he/she responds to the body language of an employer.

In other parts of the curriculum, such as in the health sciences or nursing, students who must also learn to observe keenly, practice observations of their videotaped bedmaking, gloving, and other techniques of their trade. Dental assisting students watch on their own monitors what an instructor is doing on her monitor. Films are used extensively in courses on human sexuality, in CPR training by the physical education faculty, in all areas of the arts and sciences. Visual literacy is a conscious or unconscious component in courses across the entire curriculum and is present much more widely than is writing. (The essay examination question is a rara avis, and most tests are brought to our Testing Center for quick Scantron treatment.) Teaching with an overhead projector, with pens in glowing colors, or prepared acetates is commonplace. Most television age students seem able to gather factual information from visuals. They can be taught the next step - analysis of or abstracting from what they see just as they are taught the steps in the scientific method or organization in writing.

English composition teachers tell me their students have "no ideas" to write about, and when we suggest looking at film or video, discussing what they see or think they saw, the students come alive and write about their visual experience. Poetry is a visual/verbal experience. The poet images; he first visualizes what he tries to express in words. Analogous to poetry can be a film of unusual aesthetic beauty. I am thinking of A Dream of Wild Horses, Up, or Arrow to the Sun. Use of such media can be an introduction to visual literacy in the classroom.

Visual literacy fits into every subject matter in one way or another. As an example, I shall here describe more specifically what we have done with visual observation in a psychology course at our community college. We use among other things, local architectural resources to sharpen visual literacy skills.

The advanced psychology honors class work is divided into segments. The terminal exercise is a paper on some kind of experiment developed by a student, based on his/her own observations. The first segment is on observation, visual literacy, and the identification of related thinking processes which contribute to understanding the scientific method--induction, deduction, analysis, synthesis.

I am invited into the psychology class and we spend about two weeks together on the subject of visual literacy, terminating the unit with a field trip to one of the world's great art galleries, the East Wing of the National Gallery of Art in Washington, D. C. We are lucky to have this resource a subway fare away, but in other communities a teacher could find some other type of architectural work to analyze.

Our procedure is to introduce the concept of visual literacy by first teaching about and illustrating the idea with transparencies. We talk about hemispheres of the brain and their functions. The students are involved through the use of Socratic discussion techniques, and there has always been lively discussion. The scientific method is defined and discussed. Students write brief autobiographical statements about themselves -- name, rank, serial number plus an account of their special interests. Next they are introduced to realia I bring in, and from which they are to make some inductive and analytical statements.

These objects are usually drawn from what strikes me as relevant to the age of the students, or the nature of the class. I have travelled a great deal and bring in objects from other cultures -- a box made of a New Zealand tree fern, an Eskimo sealskin scraper, sculptured or carved animal figures, pictorial folk art, all stressing how people produce useful and beneficial objects by using the forms and materials from their environment. This is a covert concept which becomes clearer as we talk, but which is not an overt objective for the observation exercise. (I just like to ring in the point!) Sometimes we use homey things -- kitchen utensils, a Mexican Indian chocolate beater, one of the pre-mixer equipment objects from my own kitchen, a German boiled egg tester, etc. The objects used are up to the teacher.

One of the students' favorite lessons according to what they tell me is based on a collection of hats -- Greek fisherman or evzone, captain of the QE2, Russian hats, Chinese hats, occupational hats from train-or firemen, ladies' fancy hats, ethnic hats, etc. Adding a tactile response, they handle and talk about the hats and what the students infer about a person who would wear this hat as a regular practice, his occupation, country, what the hat or cap is made from and whether the material comes from a particular geographic location, discussing all the things one can infer from a hat. Hats are symbols of occupation, authority, social or marital status, among other things. For some reason the students like the hat unit every much. They usually bring in some of their own hats -- after school work hats -- chefs', nurses', hard hats, baseball caps, grandmothers' hats from the attic, ethnic hats, or whatever.

Questions we ask about the examined objects are among the following:

1. What is the object? Its function? If it "works," how does it work?

2. Of what is it made? What is the nature of the material? What are its limitations? How did the maker of the object fit his objectives to the limitations?

3. Where do you think it comes from? Describe the country and its environment through clues given to you by the object.

4. Make some assumptions about the country's culture and the time of the culture. Is the object "modern" or reminiscent of an older time?

5. Is the object occupation related? If so, how?

What we are basically concentrating on is making inferences based upon close observation and seeing relationships among a variety of factors related to the object examined but also to other objects in the group of observed objects. What common characteristics do the objects have? Are there universals that exist in the group of objects? Is there any significance in what we infer about universals? What cross-cultural notions can we derive from our observations?

Once the students have begun with objects they can handle, we prepare for a larger scale lesson in observation/visual literacy, a visit to the East Wing of the National Gallery of Art, a building which is visually as exciting as any painting within, a work of supreme visual intelligence, as close to perfection as one would dream of -- a unified whole. The visit serves several purposes: looking and having a visual experience; raising the students' level of consciousness about the marvellous local visual resources just a subway ride away; getting students in touch with a wider environment than their suburban experience at the edge of a great nation's capital; examination of their own responses to these experiences.

The exercise is extended by the psychology professor who asks the students to observe people's faces and body language during the subway ride; in the gallery's cafeteria; and later at the Vietnam War Memorial.

We prepare for the East Wing experience by seeing a film about its building, A Place to Be, which we borrow from the gallery. I have prepared a packet with post cards and a printed description of the gallery. These are passed to the students and briefly discussed in terms of what we shall observe and how. Students are urged to analyze the geometric patterns in the pictures. The film and the packet are different kinds of visual experiences but they reinforce the visual in the exercise, as well as the elements in observation. After the visual practice and groundwork, comes the big Saturday when we go to the East Wing. Students are urged to take their cameras and the college provides film. The students must find their way to where we meet at Blackstone's statue across from the East Wing in order to discuss what we see about the exterior site -- which influenced the triangular shapes used in the building. Students bring clipboards to take notes.

We move to the gallery's exterior where we touch and look. There is one place at the corner facing the Mall where you can look up at a razor-thin marble edge to dizzying heights above. We talk about how it makes one feel, and the students record their impressions here and in observation of the outside, from cobblestoned patterns, to the Moore sculpture, to the ceiling of the entrance. When we enter, they are asked to point out the dominant shapes of the building -- even the shadows are triangular as the sun shines on the inner walls through the special glass windows above. We look at the Miro tapestry and the huge Calder Mobile -- always asking questions: Why did the architect or artist do this or that? Why is the mobile such an integral part of the building?

Usually there is a special exhibit which I visit the previous weekend and prepare a group of questions about, emphasizing observation and the characteristic nature of the art form. The students visit the show and write notes about what they see.

Usually one of the college video technicians or a student has a video camera, and we pretend to have an interview about what we were doing there. The students stand away at a distance and observe the people observing the video "interviewer." Who did the people appear to be? What were the clothing signals and the body language? Why were they so curious?

After this exercise -- during which we also acquire a little group of hangers-on who are listening in -- we have lunch at the cafeteria and the students go on to the Vietnam Memorial to observe its affective response among the memorial's visitors. I depart for an art lecture or my own gallery tour.

When next we meet in class we discuss the exercise. Students turn in their papers, and I read and return them to the students.

What are the outcomes?

1. Student reports speak of greater visual awareness. They say, "I never really saw the National Gallery before." "It's exciting."
2. They don't forget -- especially the hats, which I hear about semesters afterward.
3. They do further exploratory work of their own on aspects of the project.
4. They make relationships to aspects of the course and other courses -- biology, history, nursing.
5. They take our courses the next semester.
6. They write letters of appreciation to the psychologist, to me, and to the administration.
7. Most important, they talk around campus about visual literacy, brain hemisphericity, their newly-sharpened visual awareness.

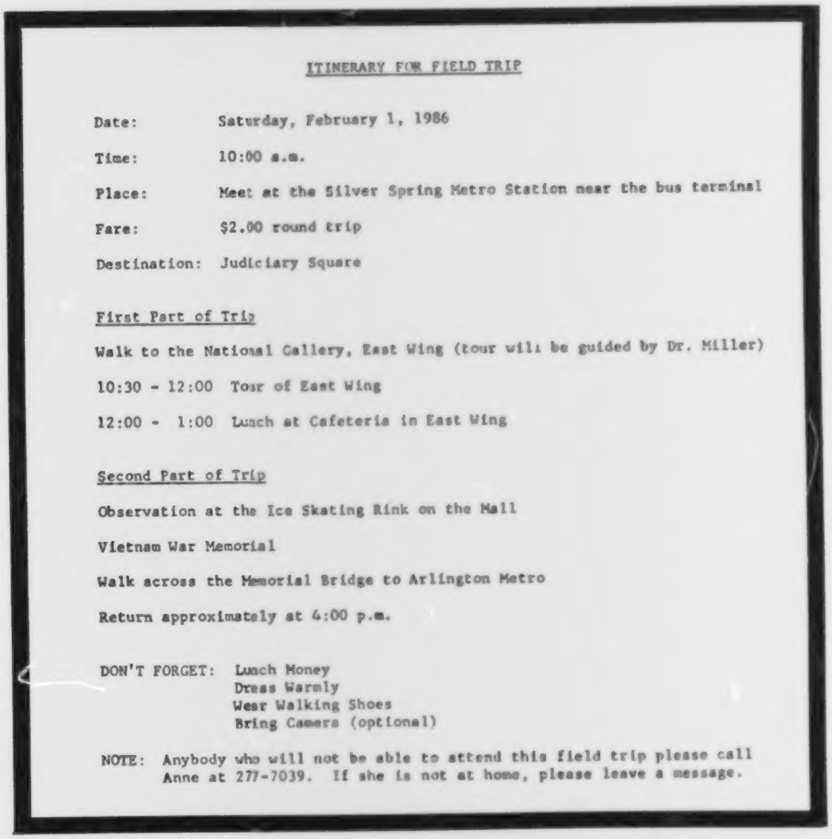
There is little doubt that similar exercises can be developed in a number of courses and disciplines. No additional funding is involved. One can use local and cost-free personal resources. (Once we used leaves from the campus, put them on the overhead projector, compared shapes and wrote compositions after looking up information about them in the library, confirming identification from their forms, etc.)

Any teacher can create such an exercise. It takes only an open mind, some information, and an exercise of imagination. It is a good learning experience for students, but most of all, for the teacher. Visual literacy across the curriculum is of equal importance, and as possible as writing across the curriculum. In the visual and auditory world of this century it is essential for all students to be able to observe, evaluate, arrive at conclusions from observing their natural environment and from analyzing out, or the electronic stimuli which bombard us at every turn. Good citizenships requires its in a democratic society.

Addendum

This presentation was based around slides of the East Wing of the National Gallery of Art slides depicting objects brought in for students to analyze, and slides of hats. The audience was asked to identify some of the depictions on the slides.

Attached are samples of some of the kinds of exercise sheets used by students.



ITINERARY FOR FIELD TRIP

Date: Saturday, February 1, 1986

Time: 10:00 a.m.

Place: Meet at the Silver Spring Metro Station near the bus terminal

Fare: $2.00 round trip

Destination: Judiciary Square

First Part of Trip

Walk to the National Gallery, East Wing (tour will be guided by Dr. Miller)

10:30 - 12:00 Tour of East Wing

12:00 - 1:00 Lunch at Cafeteria in East Wing

Second Part of Trip

Observation at the Ice Skating Rink on the Mall

Vietnam War Memorial

Walk across the Memorial Bridge to Arlington Metro

Return approximately at 4:00 p.m.

DON'T FORGET: Lunch Money
Dress Warmly
Wear Walking Shoes
Bring Camera (optional)

NOTE: Anybody who will not be able to attend this field trip please call Anne at 277-7039. If she is not at home, please leave a message.

Montgomery College
Educational Support Services
Takoma Park Campus

LaVerne W. Miller
Honors Psychology Class

The National Gallery of Art -- East Wing -- Architect, I. M. Pei [Pronounced Pay]

An Exercise in Observation

Try to determine what you see by making a note of it and then why the architect used these materials or this design or these accesories, or these colors.

1. Observation of the building itself: notice shapes, textures, shadows, the angle of the stairs, the colors of the marble, views through the windows, the placement of the Calder mobile, the use of color as a decorative element, the use of the tapestry [who was the artist?], the use of the trees, the nature and patterns of the stones in which they sit, the sculpture in the lobby, the placement of service areas.

2. When you go down the stairs to or from the exhibit, notice the stairwells, their shapes, the use of plantings. Looking up, what are the forms and patterns you see?

3. Note the fountain area before you come to The New Art exhibit. Why are the plants around the fountain? What kind are they? Of whom or what is the figure in the fountain?

4. Notice things. Stop at an information desk to see the printed material available to take with you. Pick up [a] a map of the gallery; [b] a "Calendar of Events for February 1986" which is tan with a picture on the cover of Rubens Peale with a geranium [180V]. You can put your name on the mailing list for the monthly bulletins.

5. Find your way to the gallery, in the main National Gallery of Art, in which you will find the exhibit called "The New Painting: Impressionism 1874-1886." Notice that each room in the exhibit has a different wall color to indicate the date of the original exhibitions scheduled by the artist group who broke away from the Salon.

    a. Look at the paintings carefully and notice the artists' names and dates. Notice the titles of the paintings and try to see the relationship between the title and the work. Ask yourself why a work would go untitled, for example, as Renoir's A Study.

    b. List the names of the painters. Try to notice the characteristics of the artist's paintings which make them unique and which you connect with the artist. Shut your eyes and visualize the painting. Try to remember it well enough so that if you saw it again you could identify if you came upon it somewhere else.

5. [continued]

    c. Pick one painter. As you go from room to room try to observe carefully and pick out how his style has changed or remained the same. What is your reason for arriving at this conclusion?

    d. Why do you think the exhibition was arranged as it was -- e.g., with three pictures of railway stations such as the Gare Saint Lazare hung on the same wall?

    e. It was not usual for women painters to be recognized. How many women are in this exhibit and how many are Americans? What are their names?

    f. Observe carefully the style of the pointillists. How is it a good example of how your eye and brain work together to create an image?

    g. If you were going to describe in several sentences your lasting impression of the "new painting," what things would you list?

6. On your way out of the gallery, return to the East Wing and quickly go through the exhibition of twentieth century artists. How many women are represented? Which artist did you like the most? Which work did you like the most?

7. If you looked often enough at works of art, why would you without words, be able to walk into a gallery and immediately identify the artist without reading a sign? How does this happen in your brain?

This exercise should be interesting and FUN -- enjoy the intellectual and emotional exercise! We shall discuss it at our next meeting.

[1/86:0330B]

BEST COPY AVAILABLE

MONTGOMERY COLLEGE
Educational Support Services
Takoma Park Campus

Psychology Honors Course
Observation/visual literacy component
Film: The National Gallery Builds
Study guide: LaVerne Miller

Student Tasks

I View the film called The National Gallery Builds.

A. Observe the following in the film:

1. The relationship between sound and picture in the film.

a. Which is emphasized? Which supporting?

b. What is the film maker's intended effect?

c. Are all sounds alike? Different?

2. The time sequence in the film.

a. How are you as viewers made aware of time? By what clues?

b. Why is time important as a component of this particular film script?

3. The architectural problems.

a. How does the architect deal with the total environment?

b. By what mental processes are the problems solved? (1) What does this process cause you to infer about management styles? (2) About commitment by the total group of people involved with the building?

c. How are the architectural problems affected by the architect's philosophical and practical goals for the building?

d. How do these problems impinge upon the shape of the building? Size of the building? Materials used?

e. How are they related to the artistic functions of the building?

4. Materials in the building

a. What kind?

b. How used?

c. From where? Why?

d. Light as a material?

---

5. What was the relationship of people to the building?

a. The role of architect and planners?

b. In the sequence with the contractor, what did he do to psychologically motivate the workers?

c. What did you observe about their faces?

d. Is the Hawthorne effect involved? What is the effect of of the statement that this building is the kind you will work on never again in your life...there is no second shot?

e. What inferences do you draw about the relationship of artists like Henry Moore and Alexander Calder to the craftsmen who worked in the building?

f. What inferences do you observe from the expressed philosophies of the sculptors to how their sculpture was used?

7. What in the film supports the idea that "the building is a statement of perseverance and excellence against which all builders and buildings must be measured."

If a statement is an element of communication, how can a building be a statement?

II View the building on the field trip. Observe and consciously notice it. Look for shape, texture, form, placement of building or objects as discussed in the film.

A. Take notes about what you see.

B. Jot down in a log notes about what

1. You think (cognitive)

2. You feel (affective)

3. Why you think you respond this way?

C. Jot down observations you remember from the film.

Did the film help you to understand the building better?

III Keep your notes and papers and any materials on the building that you pick up from the gallery information desk.

IV Be prepared to discuss the exercise when we meet at a later date, supporting the discussion by using your notes/log and your answers.

2/24/83

"Let's Draw" : Art Education by Radio A Historical Study

by

MARY F. KELLY

"Let's Draw!" is the title of an award winning series of creative art education radio programs that were presented by the Wisconsin School of the Air, over station WHA, during the thirty-four year period from 1936 to 1970. It was perhaps the most extensive elementary art education effort ever to be accomplished. The radio pioneer who was responsible for planning, writing and often narrating the series was James Alfred Schwalbach.

Over a million students were served by his creative art radio program over the span of thirty-four years. Enrollments in the radio project varied from 1,228 documented listeners in 1936 to approximately 120,000 participants in the 1958-1959 school year. The last year that a census of students of the series could be found was 1968. At that time there were 34,600 involved. Unfortunately, a thorough systematic account of this program has never been written. The main purpose of this study is to document the growth and development of this important long term art education project.

"Let's Draw" was the fourth art education series to be aired at radio station WHA. The woman who was the Art Supervisor of the Madison Public Schools, Lucy Irene Buck, first conducted a "Picture Study" radio program in the 1931-32 school year. Later that year a series called "Art Craft" began with four talks on men of art given by Frank Zozzora from the University of Wisconsin Art Education Department. In the fall of 1932, the "Art Craft" series was taken over by Wayne Lamere Claxton of the same department, and the following year the name of that series was changed to "Creative Art." This program was offered only three of the four years spanning the 1932-1936 period. The "Creative Art" program had evolved from one which placed greatest emphasis upon the more formal, technical and manipulative side of art; it gradually became one that focused primarily on the expression of the ideas and impulses of the student. In 1936, Claxton left Wisconsin and James A. Schwalbach was hired to take over the radio programming in art Education.

James A. Schwalbach

Schwalbach had had some experience during high school writing, producing, and narrating his own educational radio programs on safety, and he was an art teacher with little more than a year of teaching experience at the time he applied for the job at station WHA. When Harold B. McCarty, Director of the Wisconsin School of the Air, asked Schwalbach to give him some suggestions for a program or two, he came back with an outline of programs for the entire year. This enthusiasm was the hallmark of the way in which James Schwalbach embraced the entire thirty-four years of involvement with the "Let's Draw" project. Surely this spirit carried over the airways to the students and teachers who began using the early broadcasts. It was easy for him to convince students and teachers of the importance art could play in one's daily life. He was constantly a student, artist, and teacher of most media, and he remained so throughout his entire lifetime.

"Let's Draw" Features

In the beginning, regular features of the "Let's Draw" project included an advance listing of programs, instruction letters to registered listeners, periodic mailing of art work to the radio station, a weekly announcement of "Honor Roll" students who sent in the most outstanding art work, follow-up "Honorable Mention" citations in the form of post cards to some students from each participating school, and the "Round Robin Exhibits" of student art. In later years "Let's Draw" also had an annual publication of teacher's manuals, "The Gathering of the Clan", (a group meeting in the radio studio of outstanding students from each school for the final broadcast of the year), a "Badger Artist" program which introduced a recognized adult Wisconsin artist, an advisory committee of well known Wisconsin art educators, supplemental original filmstrips, a tape recording service, and large regional workshops held throughout the state in combination with vocal music festivals.

"Let's Draw" Goals and Methods

The "Let's Draw" series was first meant to serve as an introduction to artistic method while stimulating the imagination of the young participants. Paramount to the "Let's Draw" project was the goal to allow students freedom to express their own ideas and to help students develop individuality. "We do not copy" and "art is fun" were phrases common throughout the series. Each of the segments was a new mix of music and dialog or narration and only rarely was any program rebroadcast. Many of the programs involved less familiar children's stories and some had their basis in the folklore of Wisconsin communities.

Over the decades the radio programming evolved to meet the changing needs of the teachers and students alike. The first broadcasts, in the late 1930's, were intended to be easily used by the classroom teacher who, in those days, was often a high school graduate who might have received a teacher's certificate after one or two years of normal school training before entering the field of teaching. While the "Let's Draw" series was originally aimed at serving the needs of fifth through eighth grade students in a one or two-room school, it was often adapted to teach creative art at all levels from first through eighth grade.

Twenty years later, the program was geared more for use by the teacher with a four year diploma who had specialized art training and could comfortably discuss the concepts covered in the broadcast with the students. In the final decade of the "Let's Draw" series, the programs were designed mainly to teach basic art concepts that could be used by the art specialist more as a point of departure that could be expanded upon by student and teacher exchanges, as well as for use by teachers of self-contained intermediate level classrooms. A portion of the series after 1963 was designed to employ "Radiovision," a technology which used specially created film strips which were correlated with the radio programs.

The early radio series was a break from the pattern art that was prevalent in the Wisconsin schoolrooms in the 1930's and 1940's. It encouraged individualized expression to the radio stimuli. Teachers using it could not rely on duplicated outlines to insure uniform results. According to James Schwalbach, the broadcast topics were divided into five categories: environmental, crafts, narrative, music and miscellaneous. He described environmental as "Broadcasts which caused the boy or girl to look to his immediate surroundings for his ideas for creative expression," crafts as "Broadcasts where the boy or girl constructed some simple useful object using the materials on hand", narrative as "Broadcasts where the ideas for creative expression came from a story either told or dramatized", . . . music as "Broadcasts where an unnamed and undescribed piece of music suggested the pictures". The miscellaneous category included broadcasts that focused upon the techniques used in a specific media like fingerpaint or "Hidden Pictures". The "Gathering of the Clan" broadcasts were also included within this group.

If we examine the "Let's Draw" radio series to attempt to determine the art theories it used we find that most often it encouraged the use of symbolism in non-discoursive expression more than formalism or expressionism. All three art theories were important in the development of the programs to varying degrees. One of the changes in the emphasis that did emerge over the 34 year period was more of a shift to a larger proportion of the programs that used formalism and expressionism in the last two decades of the broadcasts.

One change in the approach to teaching art by radio in "Let's Draw" began in 1958. It was the introduction of one or two programs each year that entailed talking about major art concepts rather than the usual hands-on experience. This was the first time in the series that concepts were not integrated into an art project. In those programs questions were raised that required critical thinking and talk about art. The classroom teachers and students were encouraged to continue the discussion beyond the end of the broadcast.

Broadcast Schedule

First actual broadcasts of the radio series in the fall of 1936 took place on Wednesday afternoons from 2:45 to 3:00 P M. Early listener response to the programs indicated that that time slot did not allow enough time in the school day for children to complete their art work and do the necessary clean-up chores before dismissal. In the fall of 1937 the creative art program was moved to Tuesdays at 2:00 o'clock and averaged 20 minutes in length. By the fifth year, 1940, the "Let's Draw" transmissions had moved to 1:30 on Tuesdays and they remained there for the life of the series. Gradually the length of the program increased. During the 1944-1945 school term the programs lasted twenty-five minutes and by the 1946-1947 year they were a half hour long.

Broadcast Format

The programs began with a short segment of the lively theme song: "Flapperette", on the Victor Label, which was soon followed by the greeting, "Hello Boys and Girls!" At the end of most lessons, Schwalbach would encourage students to continue and complete their projects and before he signed off he would also indicate that the teachers would allow them to take the necessary time to get their art work done.

Even though the transmission time was gradually lengthened, James Schwalbach held onto one organizational principle that had been with him from the start. He would not allow more than seven and a half minutes to pass before he had the students start expressing themselves visually with the designated media for that day's lesson. The only exceptions to this rule came later with the few programs which were designed to promote critical thinking instead of the hands-on art experiences.

Manuals

An advance listing of the upcoming semester of "Let's Draw" broadcasts were routinely distributed to the schools in a bulletin that was sent out by the Wisconsin School of the Air. It carried the course outlines for the current educational offerings along with a listing of the program times. In 1936, the creative art program was one of ten radio programs mentioned for use with students in the elementary grades. The other features included "Afield with Ranger Mac," " Heroes of History," "Story Time for Little Folks," "Nature Tales," "Journeys in Music Land," " Health Winners," "Music for Younger Children," "Rhythm and Games," and "Exploring Our Needs."

The first manuals were sent out in 1938, free of charge, in looseleaf form (to encourage the use of individual sheets for display purposes). They were a response to the increasing enrollment in the program and the dissatisfaction with the distribution of the teacher-instruction letters which had been used during the two previous years. These guides outlined the aims and general practices of the broadcasts and also provided detailed information about the thirty-two programs that year which were organized into seven different units of study. The 1939-1940 manual had a charge of fifty cents printed on the cover and schools were asked to remit the amount to pay for the costs of printing and postage. Later, the booklets included student art, and by 1950 they even featured one multi-colored reproduction. It was not until 1951 that that price was raised to the final price of one dollar. By then the manuals were far more detailed and technical.

Guidelines for Teachers

The role of the teacher was often defined in the manuals. Schwalbach wanted each educator to go beyond that of maintaining the proper broadcast reception and providing the necessary materials. He wanted them to use encouragement judiciously and to avoid criticism of creative student effort, regardless of how poor the technical handling of materials. Schwalbach commanded teachers "Do not do any grading of drawings if you can possibly avoid it. . . . If you are required in your system to give a grade, call that grade a participation mark, basing it on the children's enthusiasm and attitudes, not on the qualities of their art work."

Media

The media were generally selected on the basis of how easily they could be used by students and how readily available they were in the schools. Some of the manuals carried recipes for different kinds of paste or finger paint just in case there was a shortage.

The use of pencils and rulers was strictly discouraged. Schwalbach saw pencil as a colorless medium that could be used for creative expression but felt that it was likely to rob the drawing of spontaneity when used to guide a crayon drawing. He believed that the ruler was another device that may be used to obtain accuracy but that it tended to stiffen and dull the creative impulse.

Program Evaluation

One of the many ways Prof. Schwalbach kept in touch with the needs of his listeners was by going into the schools, unannounced, and sitting in the back of classrooms, observing the students as they participated in the programs. After the broadcast he would discuss it with them. He also used the manuals to solicit constructive criticism from the program users. The first page was usually an introductory letter to the teacher in which Schwalbach personally encouraged the teacher to ". . . help evaluate its usefulness." Sometimes, a survey was included at the back of the teacher's manual asking the teachers to poll their students or write up an evaluation of the radio series.

In 1950 a state advisory committee for "Let's Draw" was established after two years of planning. It was directly connected with the Art Curriculum Policy Committee of the State Department of Public Instruction and it included representatives of the listening audience that taught in parochial, private and public schools.

Schwalbach always encouraged teachers to periodically send a sampling of the best student art work to the radio station which he would view as a measure of the program's effectiveness and how the students were able to relate to the programming. At the same time it gave him and his staff an opportunity to select some students to receive recognition in the form of post cards of "Honorable Mention." The criteria used to select the meritorious work were "Originality and cleverness of idea, Freedom and looseness of methods involved, Richness of the color harmony." Some of the children's art works were also chosen to become part of the "Round Robin" traveling exhibits that rotated among the participating schools during the first two years of program. The next year, eighty four exemplary drawings by fifty-two students were chosen from selections sent in from 25 schools. That year and every year thereafter such examples of student work were matted and made into more permanent exhibits that became available, upon request, to schools and teacher's conventions. Later, some of the children's drawings and paintings were selected to illustrate the teacher's manual to be sent out in following years. A few students were chosen to become part of a "Gathering of the Clan" program held each spring in WHA's Radio Hall. The students and adults would come to Madison from all over Wisconsin to take part in that special broadcast.

Awards

On three different occasions, in 1936, 1945 and 1965, individual broadcasts from the series were entered into competitions which were held by the Ohio Institute for Education by Radio, and in each instance they were awarded first place for excellence. The awards for the "Let's Draw" series spanned the life of the program. In 1937 the segment entitled "Mystic King of the North" (which was based upon Edvard Grieg's "Hall of the Mountain King"), was entered in the First American Exhibition of Recordings of Educational Radio Programs conducted at Ohio State University in Columbus, Ohio. It received the highest honor then, and subsequent entries "The Wild Ride of Ichabod Crane" in 1945 and The Lights of Christmas" in 1965 did equally as well.

Recognition Outside Wisconsin

James Schwalbach's pioneering ideas had influence well beyond the boundaries of Wisconsin. The "Let's Draw" programs were rebroadcast to schools in Ohio in 1939 and the series served as a model in 1943 for the creation of a course entitled "Art by Radio" that was developed by the University of Kansas. James Alfred Schwalbach also served as a consultant for setting up radio programs in creative art which were broadcast from Toronto, Canada; Stuttgart, Germany; and Tokyo, Japan. Before 1941, some exhibits of the student art were shown in the Memorial Union Galleries in Madison, in the Milwaukee Art Institute, in Blackstone Hall of the Chicago Art Institute, and at a 1944 inter-cultural exhibit in Mexico City. Student pictures, along with tapes of the broadcasts, were used to demonstrate the program at educational meetings in Colorado, Illinois, Indiana, Massachusetts, Minnesota, Ohio, Pennsylvania, South Dakota, Texas, Washington, and Wyoming. In June of 1949 "Let's Draw" was described in an article written by Richard S. Milbauer for the magazine Amerika which is published by the U.S. Department of State for distribution in the Soviet Union.

Growth and Decline of "Let's Draw"

There is no accurate way to determine the actual number of listeners to any given broadcast or the impact it had. We are, however, able to trace the growth of the series through the number of requests made to the radio station for the manuals (that were designed to be used in conjunction with the broadcasts) and by the amount of art work that was received. Those records which are available indicate that the audience increased from 1,228 documented listeners in 1936 to approximately 120,000 annually by the later part of the 1950's. The number of participants began to decrease sometime after that to a documented 34,600 in 1968 (the last year for which records could be found). Based on these incomplete records, it is estimated that over one million students were reached by the 1,059 broadcasts during the thirty-four year life of the program. Little is known about the student populations using the programs other than their grade levels. It is presumed that most of the children were taught in heterogeneously grouped classrooms, located within the State of Wisconsin.

The growth of the participation in the "Let's Draw" radio series seems to be linked to a number of factors which included James Schwalbach with his links to artists and educational institutions, teacher's lack of training in the arts, and the development of radio as a new mass communication medium. In 1936, when the program began, radio technology was new and fresh. At a time when telephones were scarce, people were eager to listen to the voices heard across the airways. The rural existence was devoid of the multiple means of mass communication that are commonplace today. Perhaps that is why the early audiences were able to overlook the shortcomings. (The educational radio broadcasts were often plagued by technical difficulties including poor sound reception, static, and fading AM signals.) Eventually, most of the problems were eliminated with the advent of the FM network broadcasts, outside aerials and better receivers.

Changes in the factors that had promoted the growth of the "Let's Draw" radio series were later responsible for the decline in it's popularity. The enthusiastic young man of twenty-three, who had tirelessly selected descriptive music, plays, poems and stories to be used for motivation of the students over the thirty-four year course of the program had aged. Although his enthusiasm for "Let's Draw" had never declined, his interests had broadened and he also began developing art programs for educational television. The technology had changed. Instead of being limited to the aural mass communication medium, radio, James Schwalbach could also use the audio and visual capabilities of television. (While many predicted it would become a more valuable medium for public school art instruction this did not happen during Schwalbach's lifetime.)

Perhaps the decline of the radio and television projects was partially due to the new Wisconsin State Integrated Aids law of 1949 which paid state aids to school districts on the basis of the quality of their educational programs. In effect that law mandated that the public school teachers have a liberal arts education as part of their four year teaching degrees, and that art and art teachers be available in kindergarten through eighth grade as well as in the high schools. Thus, there was a rapid increase in the number of teachers with training in the liberal arts and of art specialists at the elementary school level. These art specialists were expected to do their own teaching, rather than to rely on radio broadcasts. Even those teachers who wanted to use the programs were limited by the broadcast schedule. They either had to use it at the time it was broadcast, record it with bulky, hard to use reel-to-reel equipment, or purchase prerecorded tapes for use at other more convenient times.

The greatest impact of the radio series is perhaps immeasurable. It is the way it has changed the lives of the many students since their involvement in the project. For those interested in studying art at the college level, it gave them an advantage over other students. Some educators speculate that "Many of them went on to become professionals in the field of art".

A more visible impact is the change in the way in which art education is now provided at the elementary school level in Wisconsin. Only 25% of the school districts employed art teachers in 1955. Just one decade later 75% of the Wisconsin school districts had hired one or more visual art specialists. It seems obvious that there had been an increase in the general recognition of the need for art education in public schools in Wisconsin. This increased demand for elementary art education was perhaps due in part to the effectiveness of the "Let's Draw" radio broadcasts.

Implications for Art Education

Today, under most circumstances, it would not be the recommended that mass media be the primary means for instructing students in the visual arts. It is believed by some, however, that young people today do not have enough opportunities for productive self-expression, and there is a continuous effort in most educational settings to curb spending. A review of the thirty-four year "Let's Draw" series provides a valid record of a long–term experiment which asked the question: " How can aesthetics education be successfully taught through an non-visual medium?" As such, it may provide an important foundation for the development of supplemental individually guided art education programs which could utilize modern technology in the form of cassette players, tapes and an assortment of art materials. Such programs could be used in addition to the ongoing art curricula or could also serve as alternative studies for those who can not participate in other art programs at a given time.

Individuals who have information and details of this or other radio broadcasts in art education are encouraged to send them to the writer: Mary F. Kelly, P. O. Box 146, Cottage Grove, WI 53527.

Bibliography

Claxton, W. *An Experiment In Radio Art Education*. Master's thesis, University of Wisconsin 1936.

Schwalbach, J. A. *An Experiment in the Teaching of Art Over The Wisconsin School of the Air*. Master's thesis, University of Wisconsin 1938.

Mc Carty, H. B. *Creative Art by Radio*. See and Hear, The Journal on Audio-Visual Learning, 1946, May V.1/9, 65-69.

Wisconsin School of the Air. "Let's Draw" manuals and scripts bound in volumes dated 1936 through 1969.

Byrd, G. Written statement to the author dated June 11, 1986.

Collins, E. Letter written to the author dated May 13, 1986.

Hendrickson, T. C. Interview conducted by the author on September 26, 1986.

Logan, F. M. Interview conducted by the author on July 14, 1986 and 18, 1986.

Computers for Art Analysis

by

HOWARD BESSER

The University of California at Berkeley is designing and implementing a computer system to make facsimile images of art objects available throughout the campus on high resolution computer displays. This system will allow one to view images of the art in our museum's collection from remote locations, and to analyze the works closely using zooms, pans, and split-screens. One would even be able to see how they might look under different conditions. This is part of a larger project at UC Berkeley to make the contents of all campus visual collections (slides, books, paintings, manuscripts, maps, and other artifacts) available from any computer workstation that is able to access the campus network.

This paper describes the relevance of this project for art analysis in museums, art history classes, and in other studies of art. It then explores the implications of such a project in altering both the study of art, and the role of museums in society.

The Technology

This system takes high-resolution digital images of art objects and integrates them with a traditional text-based on-line catalog. Though for purposes of basic information retrieval, our system looks similar to videodisc-based (analog) catalogs at the National Gallery of Art (National Gallery of Art Videodisc, 1984), the Library of Congress (Parker, 1985; Price, 1985), the University of Wisconsin (Marschalek, 1986), and the University of Texas (Rorvig, 1986), and others (Anderson, 1985), several features of a **digitized** system such as ours distinguish it. In an analog system, images are stored on videodisc or videotape and merely retrieved by the computer. In a digital system such as the one we are building, the images can be stored in digital form inside the computer itself, thus enabling our system to provide many unique functions. It will be able to deliver images to remote workstations, give the user the opportunity to zoom in and out, do split-screen displays, dynamically alter the colors, and compare before-and-after images.

Images on a videodisc can be a maximum of 525 dots high and can reflect only 256 different colors in both the way they are stored and how they are displayed. A digital system, on the other hand, can store images more than 4,000 dots high (though at the moment only display about 1200 of them at a time), and can store and display about 16 million colors. And since a digital system stores the images in discrete units, digital copies do not deteriorate with each new generation as do analog copies (an important feature for preservation and conservation practices).

Of course one pays a price to use digital technology today. Digital requires much more storage than videodisc, and is at this time much more expensive. Prices are already falling dramatically, indicating that digital should be much more affordable in several years (Lynch and Brownrigg, 1986b). This can only encourage the exploration of its many uses in the near future.

Our underlying concept is that a good facsimile image of virtually any object owned by the University of California should be viewable from any bit-mapped computer display device anywhere on the campus in the highest resolution and the best color that that device will display. Images will be available on devices ranging from simple IBM PCs with enhanced graphics displays to workstations with such high resolution that their displays resemble photographs.

This means that images from our digitized collections will be viewable from machines in a multitude of different locations: faculty & staff offices, libraries and museums, classrooms, public terminal rooms, and student labs.

Our system will resemble a traditional on-line card-catalog with added viewing features. One can approach it by traditional author/artist or title searches, as well as by period, country, school, or subject (Sarasan, 1984). One can pull up textual information about each work and narrow queries according to certain criteria. At any point the user can shift from viewing the descriptive text to viewing the image described. We will also provide routines for close analysis of the images themselves, allowing people to zoom in and out, and to view split-screen displays. We will provide routines allowing people to alter the image and to try to answer "what if" kinds of questions.

Preserving Image Collections

One of our objectives is to preserve the original material in special art and photo collections from deterioration stemming from exposure to light, changing temperature, and human handling.

By allowing remote viewing of high resolution surrogate images, our system makes possible the preliminary identification of materials of interest. For many peoples' purposes, identification is the only access they need; the material itself can remain undisturbed.

The decreased handling of sensitive objects that will result from better preliminary identification, will both save wear and tear on sensitive materials, and will free up staff time previously spent pulling and replacing items for activities such as preservation. A University of Texas study (Rorvig, 1986) has suggested that if users have access to images of objects they are interested in, less textual description will be necessary, greatly reducing the labor cost of cataloging. This savings could then be redirected towards preservation.

I should stress that we do not see our system as a replacement for viewing the original objects themselves, but rather as a tool that enhances traditional access materials, and in certain controlled cases replaces other surrogate images (ie. slides) used to study art.

Use in Museums and Archival Settings

This technology has many applications in other areas important to museums and archives. For **Condition Reports**, the computer can compare before and after images dot-by-dot to detect even minute scratches or fading as a result of atmospheric conditions. Similar technology is currently in use at the National Archives to track even slight changes to documents such as the Declaration of Independence and the Constitution (Jet Propulsion Laboratory, 1984).

For **Preservation** -- particularly of photographs -- this technology can be used to create new 8 X 10 negatives with scratches removed and color restored to its original state (Lynch and Brownrigg, 1986a).

For **Restoration**, this technology allows one to view what an object would look like with molds or stains removed, or if a particular restoration process were performed (Cappellini et al., 1984). It also allows one to view changes that were made in the object in the past. For example, researchers have used this technology to speculate that the Mona Lisa probably had a necklace around her neck at one time, and that restoration work had definitely been done around her eyes (Asmus et al., forthcoming). In **Exhibition**, this technology allows museum users to view images of works not actually on display, to juxtapose images in new ways (essentially taking on some functions that are usually exclusively reserved for curators), and to view bibliographic references and explanatory information alongside the images.

Art Education

As should be evident from the previous description, students will be able to study images of art objects from any high resolution computer display terminal. Currently, we have about 20 computer rooms (many of them open 24 hours per day) spread around the campus, and when our project is implemented, any and all of these can serve as laboratories for individual and group study of art. In addition, high-powered workstations are located in various departments, and in instructors' and researchers' offices. Some students even have lower-resolution versions in their own homes. In the near future, we will be outfitting selected classrooms with the hardware for projecting these images on a screen.

Features

The University of California system will incorporate many features useful for traditional classroom and related art history instruction and research.

This technology can be particularly useful for the close study of images. First of all, it allows one to **zoom in** and zoom out to see very detailed close-ups of various sections of an art work. One can also produce **split-screen** displays to compare close-ups to one another, or to see a detail alongside a full perspective. For example, one can simultaneously display images of human eyes from two different portraits in order to compare or contrast their constructions. This can be very useful in demystifying the actual construction of works of art. Finally, one can use this technology to closely examine a painting for odd strokes that indicate that touch-ups have been previously done, or that images have been covered up underneath (Asmus, forthcoming).

This technology can also be used to examine hypothetical changes to works of art. One can **change colors** on a painting to see how it might have looked if it had been painted in different tones. For example, one could answer the question, "What would this have looked like if the artist had painted with a slightly darker blue pigment?" This tool can assist a student's understanding of how colors function within a painting. Similarly, we will be providing routines to simulate **restoration** techniques. For example, one could look at how a painting might look with its cracks restored, or how another object might look with a mold or stain removed. This will both allow students to see how these art objects might have looked when they were originally created, and it will allow researchers to experiment with restoration techniques before actually touching the objects.

Eventually, new areas of research (such as pattern-recognition) will be applied to our system, allowing the computer to do some preliminary syntactical analysis of works of art (Kirsch, 1984). The computer will be able to give statistics as to quantities of various colors used and their distribution around the canvas. It should also be able to analyze angles and line-of-sight flows within paintings.

Ramifications of a project such as this

The main impact from a project such as this is in the area of **democratization**. Each phase of this project will either bring art into the hands of more people, or allow people to do more with the art with which they come into contact. This democratization falls into two general areas: increased access and interactiveness.

Traditionally art has been housed in museums and other collections where access is tightly controlled. This control takes the form of limited hours, admission fees, and limited displays (ie. only a small portion of the full collection is on display at any given time). On a more subtle level, the control manifests itself by enforcing a kind of elitist way of evaluating and looking at art.

Under our system, the patron will have access to art objects at hours when the museum is normally closed. The ability to pull up images of art objects on nights and weekends (essentially at any time one has access to a bit-mapped terminal) is not unlike the kind of "instant gratification" that we are beginning to see manifested in more popular art forms such as videotaped films.

Control could be greatly reduced with the implementation of our project. Images of art objects would be accessible from multiple locations; the patron would no longer need to visit the actual gallery or museum. In the long run, this will likely erode the authority of the museum, as well as that of high culture generally.

The patron will also have access to more materials. Currently, those in charge of art collections are hesitant to pull material from storage due to concerns about staff time and damage to the material. These concerns serve to limit access to those certified as special scholars. But under our system, objects not chosen for display as part of an exhibition will still be available to anyone, (certified or not) at any time, from computer workstations.

As Walter Benjamin pointed out (Benjamin, 1978), being able to appreciate a work of art in a setting other than a museum is a significant step in opening up art to the masses. Of course, living in the latter half of the 20th century, we are already used to determining the setting for our own appreciation of culture. We don't have to go to a concert-hall to listen to music; we can listen in the comfort of our homes (or even while jogging). But one level of democratization that Benjamin did not anticipate was the ability to **interact** with the art, brought on by the computer age.

The interactiveness of the system we are building offers the opportunity for participation in many different ways. With the ability to zoom in and zoom out and to compare close-ups, the spectator can begin to make his/her own juxtapositions at various levels. This includes placing close-ups side-by-side, as well as juxtaposing whole paintings to one another. By being able to create these new juxtapositions, the spectator is taking back the power that has been held almost exclusively by art curators and exhibition designers. The ability to juxtapose allows the spectator to use his/her own creative input to find new relationships between these objects. The user's creativity can be engaged even further when given the opportunity to alter the colors, thereby diminishing the authoritative position of the artist.

The changing roles of both museums and art

The democratization resulting from the increased access and interactiveness has critical implications in many different areas. This is particularly true in the changing roles of both museums and art.

As a result of this democratization, the museum loses its authority as the **only** place to view such objects, and will become less of a sanctified place. By encouraging access to all its materials, it becomes less archive-like and more library-like. The museum will shift from being a passive repository, and begin to take on a more active role. There is great potential for the museum to take on a much larger instructional role.

This democratization will also have significant effects in changing the role of art in society. Today the study of art and the examination of original images or high-resolution facsimiles is confined to museum-type settings and classrooms. By bringing the study of art out of these settings and into new arenas such as computer labs, study halls, and even the home, the study of art can become less of something that is done only in specialized environments, and more a part of daily life. The erosion of this "specialness" cannot help but change how one views the study of art.

At the same time, the ability to interact with and change the art itself has extremely important implications.

On the positive side, this democratization gives the spectator a sense of participation and input, qualities often lacking in the traditional viewing of art. Being able to interact with and change the object helps to destroy the "aura" that surrounds it and all other art objects, rendering them less special and "holy". As Benjamin points out (Benjamin, 1978, 223), this increases our "sense of the universal equality of things," and we begin to see art objects as objects.

The ability to actually change the image of the art on the screen begins to remove the authority of the original artist, essentially forming a new creation out of a synthesis between the artist's work as originally conceived, and the user-invoked changes. This will cause a definite shift in importance away from the domain of **intentionalism** (where we see the meaning lying between the artist and the art piece) towards **reception** (where the meaning is between the viewer and the piece of art (Holubs, 1984).

On the other hand, there are many potential negative effects that may result from this kind of interaction with images of art objects. Perhaps the researcher interacting with the artwork won't really give that much input at all. Rather than creating something from a concept, one could say that he or she is merely **reacting** to a previously-packaged piece (almost like filling in the colors in a coloring book). But this **reacting** may, in the future, be considered **creativity** in the same way that preparing a meal in a microwave oven has come to be called "cooking".

With the authority of the artist and the sacredness of the art object removed, does art then become even more a victim of the marketplace? In this age of commodification, art will become even more of a consumer product (Silverman, 1986). Whatever sells well will be produced. Instead of encouraging individuals to alter pieces of work in their own creative ways, we may end up with a new elite who will control the alterations in ways governed solely by what the marketplace will bear. A case in point is the present-day phenomenon of the colorization of classical films from the 40's. While Frank Capra is aghast at turning **It's a Wonderful Life** into a color film, Ted Turner claims "I own the films, ... I can do whatever I want with them ... Besides, I like things in color. We see in color. Why didn't they make **The Sting** in B & W if they're so concerned about historical authenticity? I don't see their point." (Associated Press, 1986) Is the logical conclusion to all this that art will become just another commodity like shaving cream, baseball cards, or pantyhose? Will art be reduced to its lowest common denominator like music in elevators?

Confusion of Surrogate Image and Original

Increased access to these images may lead people to confuse the image with the artifact that it represents. Eventually, the image may no longer be viewed as merely a temporary substitute for the original, but rather as a permanent replacement. In this day and age, where **time** is so scarce, people are less likely to make a special trip to a museum to see an original object if they can see quite a reasonable facsimile from their terminals -- especially if they can "play" with it. Over time, people may increasingly forego the experience of looking at actual art pieces because it's so much easier to view images from a screen. What they will be missing is some kind of presence that cannot be reproduced, and cannot even be adequately expressed in words. It is the same kind of unquantifiable experience that is rapidly disappearing from life in our modern society, like growing and cooking one's own food, catching one's own fish, traveling for the pleasure of seeing and experiencing the adventure (rather than solely to arrive quickly at a destination), or creating one's own fantasies (instead of having them created by television or video games).

Though museum administrators (if only for political reasons) are likely to be the last ones to confuse originals with surrogate images, they may tend to further restrict access to original artifacts since the surrogate images are so good. The originals might then be even more carefully restricted and only shown to "approved" scholars who can demonstrate a specific need to see the original. This will be especially true if museum budgets continue to tighten.

Because of these potentially negative factors, it could be argued that it might be better to provide coarser images. In a sense, a poor surrogate image of an object is far preferable to a good one, because a poor image calls attention to the fact that it is indeed a representation of the original. A more detailed image, on the other hand, tends to mask the fact that it is merely a reproduction, and for many people it will be seen as a one-for-one substitute for the original. But it is only because the image is such a good representation that the positive aspects of this project (such as image comparison, preservation, and conservation) can be realized.

Though a project like the one we are building offers the possibility of immense benefits, the ramifications could be rather devastating. When introducing technology into any new environment, it is impossible to accurately predict the full social impact that will result. All one can do is to outline what appear to be its potential positive and negative effects, and evaluate these before deciding whether or not to proceed. But a clear assessment is only possible in retrospect.

REFERENCES

Anderson, F E. Electronic media, videodisc technology, and the visual arts, Studies in Art Education, 1985, 26 (4), 224-231.

Asmus, J F, R Bernstein, J V Dave, and H J Myers, Computer Enhancement of Da Vinci's Gioconda, forthcoming article.

Associated Press. Ted Turner Defends Coloring Classics, San Francisco Chronicle, October 24, 1986.

Benjamin, W (1978). The Work of Art in the Age of Mechanical Reproduction. In Illuminations, New York: Schocken Books, pp. 217-251.

Cappellini, V, M Bacci, and C Conese (1984). Digital Methods and Techniques for Analysis and Cataloguing of Art Works. In Laura Corti (ed), Second International Conference on Automatic Processing of Art History Data and Documents: Papers (1984: Pisa, Italy), vol. 2, Florence: , pp. 274-290.

Holubs, R C (1984). Reception Theory: A Critical Introduction. New York: Methuen.

Jet Propulsion Laboratory (March 15, 1984). Conceptual Design of a Monitoring System for the Charters of Freedom. Pasadena, Calif: Jet Propulsion Laboratory. (JPL Publication 83-102) prepared for National Archives and Records Service

Kirsch, R A (1984). Making Art Historical Sources Visible to Computers: Pictures as Primary Sources for Computer-based Art History Data. In Laura Corti (ed), Second International Conference on Automatic Processing of Art History Data and Documents: Papers (1984: Pisa, Italy), vol. 2, Florence: , pp. 274-290.

Lynch, C A and E B Brownrigg (1986). Conservation, Preservation, and Digitization. In Danuta A Nitecki (ed), Energies for Transition: Proceedings of the Fourth National Conference of the Association of College and Research Libraries (Baltimore: April 9-12, 1986), Chicago: Association of College and Research Libraries, pp. 225-228.

Lynch, C A and E B Brownrigg. Library Applications of Electronic Imaging Technology, Information Technology and Libraries, 1986, 5 (2), 100-105.

Marschalek, D (1986). Visual Arts Index System. In *International Visual Literacy Conference*.

(1984). *National Gallery of Art Videodisc* (*Videodisc*). New York: Videodisc Publishing.

Parker, E B. The Library of Congress Non-Print Optical Disk Pilot Program, *Information Technology and Libraries*, 1985, *4* (4), 289-299.

Price, J. The Optical Disk Pilot Program at the Library of Congress, *Videodisc and Optical Disk*, 1984, *4* (6), 424-432.

Rorvig, M E (1986). The Substitutibility of Images for Textual Description of Archival Materials in an MS-DOS Environment. In H Strohl-Goebel (ed), *Proceedings of the Second International Conference on the Application of Microcomputers in Information, Documentation and Libraries* (*17-21 March 1986: Baden-Baden FRG*), Amsterdam: North Holland.

Sarasan, L (1984). Visual Content Access: An approach to the automated retrieval of visual information. In Laura Corti (ed), *Second International Conference on Automatic Processing of Art History Data and Documents: Papers* (*1984: Pisa, Italy*), vol. 1, Florence: , pp. 389-406.

Silverman, D (1986). *Selling Culture: Bloomingdale's, Diana Vreeland and the New Aristocracy of Taste in Reagan's America*. New York: Pantheon.

Public Speaking with Computer Assisted Visual Images: A Key to Creativity

by

JAMES C. WOLF

Research studies reveal that professional people fear public speaking more than they fear unemployment or even death! It appears to be easier to change our attitudes toward death than to change our apprehension about public speaking.

Set against these concerns, however, is the fact that new developments in computer visualization technology promises to help people speak before an audience and be as comfortable and relaxed as they are in everyday conversation. The key to these developments is the ability of a computer to draw pictures that would serve as the speaker's notes.

The use of computer generated visual notes by public speakers will have a two-pronged effect. First, the picture-notes will enhance a person's ability to talk naturally in front of a group. And second, computerized picture-notes should lead to a signigicant increase in creativity and in "intuitive knowing" - a concept which this paper will develop.

The Word-Picture Connection.

The computer can be used to develop a basic pictorial concept program. A basic pictorial code that would output in the form of visual display - charts, drawings, graphs, or animated pictures.

Perhaps it would be more appropriate to call this computer an "informer" because it would package information in a new way that would allow a speaker to use a picture pattern which would represent the speaker's thinking.

The speaker would then talk to his listeners rather than read to them, yet would still transmit his thinking in a systematized manner.

The computer-person interface is essential to a speaker's security at the podium. The speaker would prepare in two steps; first, the interface with the "informer" - the making of the pictorial pattern; second, the testing of the cohesiveness of the speech using actual words. To make this test, the speaker would talk through the speech, using the pictorial pattern as a basis for the development of the speech. After the speaker has done this a few times using different wouds each time - he/she will "trust" the pictorial pattern. The speaker will know that the pictorial images will carry him safely to the end of the speech.

The computer that the speaker uses must be equally comfortable with text or graphics. The program must let the speaker insert graphics within and around the text or tranform text into complex or simple line drawing, schematic, or digitized photographs.

The major problem most people have is their lack of confidence in their ability to draw pictures. However, set against the concerns that most people have about drawing pictures, is the fact that microelectronic technology holds the promise of a new type of human-computer relationship.

It is not the purpose of this paper to provide technical information about writing computer visualization programs for public speakers. But this paper will argue for the future development of such programs. Computer programs that would create a uniform, international visual system that would be meaningful to a broad audience.

The Case For Development of Computer Assisted Visual Images.

The concept upon which "speaking with pictures" is based has been tested in both an academic and business environment. The results have been amazing. Drawing pictures enables people to understand the structure and relationship of ideas in a speech. Using pictures instead of or with written notes forces a person to conceptualize his or her ideas.

Mark Twain Learned to Speak Without Written Notes.

Samuel Clemens (Mark Twain) used his visual memory to help him give speeches. In Samuel Clemen's own words (Charles Neider, The Complete Essays of Mark Twain, Garden City, N.Y. Doubleday & Company; 1963.):

> "...Thirty years ago I was delivering a memorized lecture every night and every night I had to help myself with a page of notes to keep from getting myself mixed... Once I mislaid them; you will not be able to imagine the terrors of that evening... It was then that the idea of pictures occurred to me! Then my troubles passed away. In two minutes I made six pictures with my pen, and they did the work of the eleven catch-sentences and did it perfectly. I threw the pictures away as soon as they were made, for I was sure I could shut my eyes and see them any time. That was a

quarter of a century ago; the lecture vanished out of my head more than twenty years ago, but I could rewrite it from the pictures - for they remain".

Convince Yourself: Find An old Photograph and Practice Speaking.

The first assignment that I give in my public speaking workshops is to ask people to find an old photograph of themselves and then to prepare a five minute speech. No written notes may be used. I suggest that people find a quiet place and look at their photograph. I then recommend that they close their eyes and watch their "mental T.V. screen" until the memory images start to flash past them in their mind's eye. The people should then talk through their speeches a number of times. The words may be different each time they practice the speech, but the general purpose of the speech should be the same.

Convince yourself: try the old photograph exercise. You will see for yourself the amazing power pictures have to trigger your memory. You will discover that it is possible for you to think as you speak, using different words each time you speak, and be an effective and dynamic speaker.

A Cognitive Shift to the "Right".

There are two important premises to understand about speaking with pictures. First, the use of visual images is central to generating a cognitive shift from the left hemisphere to the right hemisphere of the brain. And second, the cognitive shift to "Right-Mode" results in a significant increase in both creativity and in "intuitive knowing".

Current research suggests that pictures tend to be processed primarily by the right, intuitive hemisphere of the brain, but written words are generally handled on the left, or verbal and intellectual, side.

It is also important for the reader to understand that the cognitive shift to "Right-Mode" is a pathway to a significant increase in creativity and in intuitive knowing. It all works in the following way. First, the speech is drawn out in simple line drawings, thereby resulting in a shift to "Right-Mode". In the "Right-Mode" state one is wordlessly connected to one's speech. The person then shifts back to the "left-Mode" and interprets his or her "intuition" and "gut feeling" about the speech by using the logical skills of the left brain. The key to help the hemispheres work cooperatively.

Combinatory-Play.

Albert Einstein used a free association of pictures in his thinking process. Einstein in his Autobiographical Notes indicated that "memory-pictures" emerge in on one's mind and form a series. In this series certain pictures turn up again and again and become an ordering element for a given series. This series of pictures connects ideas which in themselves are unconnected. When the new connections are established a concept is created. This new relationship characterizes thinking.

Einstein described using both sides of his brain as "combinatory play", and suggested that it was the hub of his creativity.

Public Speaking and "Intuitive Knowing".

If a speech is not written out word for word there is "room" for psychic messages from individuals in an audience. The trick is in learning how to sense and utilize this other-than-ordinary information. Telepathic messages often whispers through one's mind as intuition, hunches, gut feelings, knowing, and precognition. The X-factor that makes the difference between adequate and superlative public speaking is the pulling together of other-than-ordinary information during the speaking event.

There is a between-the-lines communication between a powerful speaker and his audience. This connection is a dynamic network of countless telepathic messages. A speaker's thoughts and feelings pulse along this telepathic network.

One should expect intuition to help them in both the preparation and the delivery of a speech. One should wonder about the speech; ask oneself questions about the speech organization. This wondering triggers an intuitive process. When something bothers you about a speech, simply pause for a moment, look at the "memory-pictures", and listen to your intuition. If you sense that it is right for you to include something in your speech, you are listening to your small voice within. If you are disturbed or distressed, and it does not feel right, then you are going against the small voice of intuition that says "trust your inner guidance".

There are no magic pills, no instant solutions to effective public speaking. But many speakers are starting to realize that they have an ability to nurture the intuitive seeds within themselves.

How To Make Your Own Picture-Word Cards Without A Computer.

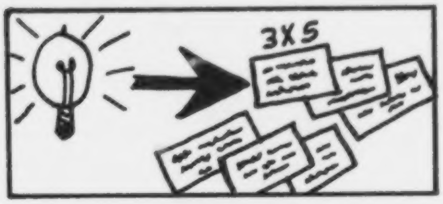
Most of us grew up believing that written notes were necessary to give a good speech. But something went wrong... Our notes became strangely foreign to us and we often resorted to reading aloud from a prepared text (with boring results).

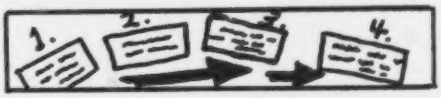
There is an alternative. The key to effective public speaking is to transform written words into simple line drawings for use at the lectern.

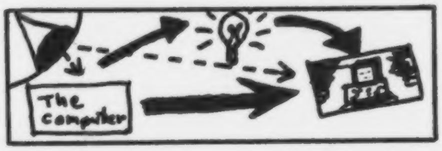
The Artist Inside of You.

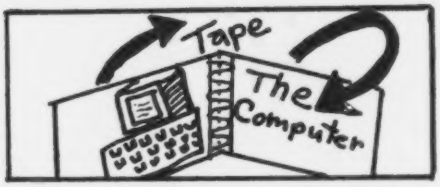
"Who, me draw a picture? You've got to be kidding! I can't draw a recognizable picture to save my life!" If this is the problem the reader is now considering, the truth is that lack of artistic talent is not a consideration. The picture - good or bad - will trigger the mind as a person speaks.

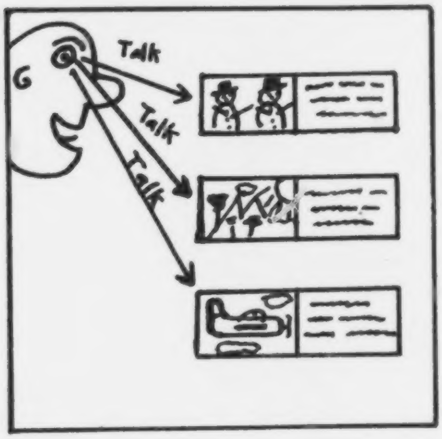
Remember, your own pictures will have associations and meanings for you. The reader will find that many complex ideas can be alluded to in one simple drawing.









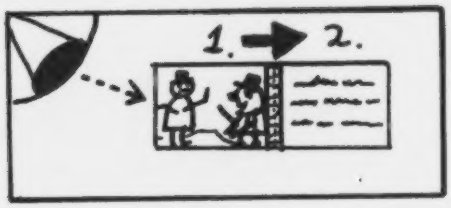


The formula for a successful public speech is to jot down (written words) rough ideas on a blank 3 x 5 card. The reader should jot down one idea per card. The reader must now combine ideas which are alike by making a new card. Next, the reader must decide on the order of ideas for his or her speech. After the sequence of idea cards has been established the reader should look at the first idea card and try to draw a simple line drawing on a separate blank 3 x 5 card that symbolized the written out idea on the first card. The reader should then draw a picture for each written out idea card.

The reader should now have both a written and a picture 3 x 5 card. Now: tape the two cards together. The picture card should be on the left as the reader faces the cards and the written card should be on the right.

The reader should now test each picture-written card combination by folding the two 3 x 5 cards in half so the reader can see only the picture card. The reader should look at the picture card and try to talk through the idea that the picture symbolizes. If necessary, the reader may refresh the memory by looking back at the written card. The reader is now ready to talk through each picture-written card combination. The reader should unfold each picture-written combination card and talk his or her way through the entire speech.

BEST COPY AVAILABLE



The picture card is to the left of the written card because we read from left to right. The picture card therefore will be the first thing the eye sees. The reader will find that the picture card is all that he or she needs to deliver the speech!

Conclusion.

Microelectronic technology holds the promise of a new type of human-computer relationship. A relationship in which the computer helps human beings to talk naturally in front of a group of people. In the future, let's make our computer technology help us to be more effective public speakers - not make us speechless.

Non-Traditional Computer Use in the Humanities Classroom

by

BERNARD BRENNER
&
MARYANNE ATKINSON

Abstract

This paper presents some thoughts on the value of the computer in the humanities curriculum. It suggests an approach to incorporating "visual process thinking" into traditionally linguistic-based classroom procedures. The paper discusses possible reasons for using the computer to bring about a balanced use of cognitive processes and a more complete involvement of the student's unique capabilities. The computer which is used in this way may be seen as a humanizing tool.

Introduction: Visual Process Thinking

This paper makes the assumption that a well conceived university humanities curriculum attempts to introduce a model of the human being as a creator, i.e., each one of us creates the subjective-objective world in which we live. The cognitive processes involved in our everyday life are not unlike those used by creative giants, who are appropriately recognized as major contributors to the culture. If we say the creative process is mysterious and basically unknowable at this time it may simply mean that we lack sufficient information about cognitive processes. Perhaps the creative process is not the exclusive domain of the fine artist: mystical and beyond words. Of course the work of a master may always remain a mystery.

This work is based on one of the authors' experiences in the university humanities classroom working with Apple Macintosh computers. It is specifically concerned with the use of computer graphics (the MacPaint program) and word processing as well (MacWrite). We encourage an approach which can be called visual process thinking, which brings an added dimension to classroom procedures that are usually based on learning verbal processes.

The computer used in this way may be viewed as a humanizing tool, in much the same role as the textbook usually occupies in the liberal arts curriculum. The only equipment required for this approach is a computer and a printer, although obviously the more elaborate the facilities the more developed the final product will be. The computer serves as an electronic design studio/workshop and it is this technology that allows the creative process to occur. Perhaps for the first time in his educative experience the student has an extremely sophisticated and powerful piece of technology available in the classroom as an expressive tool. This is not unlike the artist and his relationship to his medium.

The general teaching methods and the computer uses outlined here purposely deal with highly habituated classroom behavior. This approach gently encourages the student to modify old patterns in new and imaginative ways. It is a way of seeing the ordinary in new ways. Also it allows students to tap and become at ease with their individual expressive capabilities.

The Computer and the Classroom: The Model

The computer is of unique value in post-secondary education. Some of the reasons for its importance are outlined below.

1. **Most students do not have formal training in expressing, evaluating, and evolving themselves visually**. For many students, the last active engagement with visual processes might have been an assignment to make a construction paper pumpkin in class for Thanksgiving. The students' next encounter with the visual may have involved a critical paper discussing the differences betweeen baroque and rococo styles and the social implications of these differences. We have seen more students in museums busily taking notes, as opposed to looking at the art on the walls or on pedestals. Again, this is evidence of the triumph of the verbal (seeing with words instead of eyes).

It is possible that we need to concern ourselves with the education of the senses. We are programmed to perceive art as a noun (a thing or an object) to be abstracted into words as rapidly as possible, rather than perceiving art as a verb, i.e., the creative process or the art of making an object. A deep understanding of the creative process is denied to many of us. Is it any wonder we are so poverty stricken in the realm of new ideas, imagination and creative solutions? The computer is one of the tools that can provide both student and teacher with a fresh chance for active engagement with his or her own creative imagination.

2. **Most students are extremely self-conscious about their 'doodles' and drawings.** Somehow the visual products generated from the computer seem to have a depersonalized, manufactured quality. Paradoxically, this quality allows for free expression without the usual degree of self-consciousness. This kind of freedom might also be established by stressing the process rather than the product and through positive reinforcement of innovative energy rather than "finished design."

3. **The computer lends itself to abstraction rather than to rendering or photo realism.** The advantage of this property is twofold: first, the feelings of inadequacy expressed in the statement "I can't draw a straight line" are eliminated, and second, the often hostile question "what is it supposed to be?" is no longer relevant. Perhaps some of the culturally induced stigma ("art is nice but what do you do for a living?)" regarding the making of art no longer applies since computer use in the classroom is acceptable and indeed highly valued by those involved in the educational system.

4. **The computer as a tool is fast relative to most other visual media, and the feedback is immediate.** It well might be that the computer's speed along with the need to attend to it contributes in some way to the fixated or focussed state of consciousness reported by many computer users. Some familiarity with altered states of consciousness (usually relaxed, attentive states) seems to be a valuable and necessary part of the creative process. The speed of the computer may be an effective "teacher" of this state.

5. **The computer encourages risk-taking, trying new approaches, and generally being more adventuresome.** "Mistakes" can be undone, work in progress can be saved at various stages, and duplicate documents can be created to test new ideas. New directions can be accidentally discovered and can be pursued or saved to work on later. Bits and pieces of the work in progress can be stored and used in other visual projects. There is a feeling of flow and fluidity.

6. **The computer can generate imagery unique to itself.** This characteristic almost ensures an exciting experience of learning by discovery,

BEST COPY AVAILABLE

e.g., the ability of the computer to easily produce on command repetitious imagery with slight variations - a task that would require extensive effort if done by hand.

7. **In working with the computer all students start with equal electronic tools at their disposal.** To a large extent students' technical skills with the computer (other than programming or typing) are close to being equal. Generally students' knowledge about the capabilites of the graphics program to be used is quite similar and as the class works together through time, information relating to general computer use tends to become common knowledge. This equality seems to provide a pleasant working ambience for personal expression and exploration not unlike studio art or craft courses at the college level. There is a relaxed seriousness with a decided lack of competition in the room.

8. **Large amounts of random or accidental visual bits can be rapidly generated and transformed.** Many times in the creative process the artist "toys" with apparently unrelated bits and pieces. From this seemingly purposeless activity he or she perceives and responds in a way that gives direction and finally form to the work. The computer can provide a vast array of this "stimuli" for the creator, whatever the maturity level.

9. **Words and images can be unified in new and unusual combinations.** The computer provides countless tools for altering and creating fonts. These altered fonts can become part of visual products, and can transform the meaning of a word or piece of writing. The whole piece of writing can be abstracted into a purely visual product. To some small extent this suggests the flexibility of visual-verbal combinations made possible by the computer. New experiences in expression and communication can occur more frequently.

10. **Color, pattern, and texture can be easily incorporated into computer design.** However, since the Macintosh has a black and white screen, color must be added if it is desired. Colored pens or pencils are a simple solution to the problem. The expressive power of color can easily be employed, if desired.

11. **Computer-generated images tend to be contemporary in feeling.** The value of this quality is an unconscious "familiarity" that leads

to the student's easy acceptance of the imagery produced. In part due to the omnipresent influence of TV, film, textbooks, video and the general advertising ambience in the culture, we have become comfortable (perhaps to some extent subliminally) with electronic imagery.

12. **The rapid emergance of software and hardware products provides the opportunity for new uses of the computer, as well as the incorporation of new ideas into the classroom**. For example, a digitizer can place three-dimensional objects, cartoons, articles from magazines, newspapers, posters, art works, or graphic materials from other disks onto a new disk which contains a graphics program that can modify the new image. Sound and/or animation can also be added. Special effects such as fade in, fade out, darkening, lightening, greying the screen and so forth can be used. Manipulation of printers, ribbons, paper, and scale provide freedom for imaginative play.

13. **The computer provides a vehicle for students' exploration of communicative image-making**. It also allows the teacher to more fully use his or her imaginative communicative skills. The computer is an invitation to the teacher to expand the educational process. At times, for any teacher, there is a degree of anxiety in this invitation. Usually the excitement of the classroom and the expanded learning that occurs for both student and teacher more than compensates for any anxiety.

14. **There is a potentially playful quality to the creative use of the computer in the classroom**. Children learn through play and are very aware of this characteristic of computers. They are easily caught up in the "magic" of the machine. This childlike state is usually lost to some extent in post-secondary education. The reintroduction to this state can provide a reminder of this essential condition for expression and discovery which is not often encouraged in the classroom. Picasso, a meta-model of the creative process in the twentieth century, said "It takes a long time to become a child." It would be interesting and possibly rewarding to consider how much of this childlike energy is involved in the "critical thinking" which seems to be the accepted goal of much of the humanities curriculum.

15. **The computer can easily produce a respectable finished product with its word processing and graphic capabilities**. The difference between "student work" and "professional work" tends to disappear. This readily gives the student a sense of accomplishment. It also

blurs the line between the amateur and the professional, allowing the student to perceive himself or herself not as a distinct underclass but as engaged in a maturation process.

16. Computer use in the classroom provides the potential for informal learning. It encourages the expressive use, mastery and integration of sophisticated technology as a humanizing tool. Mastery and understanding of technology would seem to be an essential survival skill in our contemporary world. A substantial number of educators have expressed deep concern regarding the computer's power to dehumanize the student's learning experience. Perhaps it is the position of the educator rather than the machine that needs examination. A piece of technology, no matter how powerful, has no intrinsic value system and it is the educator that provides value and meaning to the academic experience.

Summary

The computer provides a new and unique opportunity to students in university humanities classrooms: access to a tool which can help them explore their own creativity. We suggest that visual process thinking, which students can learn through using the computer as a visual tool, can enhance the total learning experience.

Educating Youth in the Television Age

by

MARIELI ROWE

Summary of Panel Participants' Comments

The purpose of the panel was to provide practical classroom applications of the concepts expressed in Rowe's earlier paper, "Educating Children in the Television Age." These concepts include the notion that children today are growing up in a different environment; one in which "literacy" also requires the ability to understand and evaluate media, and to "write" good video themselves. Three teachers, representing elementary, middle, and senior high school levels, together with some of their students, demonstrated their approaches.

Alan Ginsberg, Elementary Level

Special Needs Projects, Madison Public Schools,
Madison, Wisconsin

Noting that children arrive at school having already learned to watch 50 to 60 hours of TV per week as pre-schoolers, Mr. Ginsberg began, "We teachers today have a problem." In this environment, the teaching of visual literacy becomes a necessity, indeed a survival skill. With video becoming as readily available to the student as the traditional chalkboard, we cannot let children be passive consumers of TV. But it is necessary to give them active experiences through which they may perceive the components that make video impressions; for it is as erroneous to assume that a child is capable of translating his viewing experiences into his own creations without teaching, as it would be to assume a child is a reader, therefore he is a good writer. Often a child's first experience results in recording everything that comes along, similarly to a child with his first box of crayons--there is a lot of scribbling going on!

Elementary-grade children can gain perspective on the messages of television through a series of visual exercises. These exercises include video ("what is it?") guessing games: a greatly enlarged speck from everyday items; a small corner of a large picture; a fly's eye view of the contents of a room as role-played through the view finder of the video camera; all visual impressions that reveal new perspectives, but can nevertheless also mislead through their incompleteness.

In another game and exercise, the children use the video camera to look at how many different ways a scene can be shot. Thus they examine lines, space, texture, and heighten their awareness of events. If these things are done enough, they seep into the child's understanding, help him deal with "objective" versus "subjective," get across the idea of "point of view." They develop sensitivity for the visual space and encourage unconventional use of camera, develop visual texture. Children come up with different ways of looking at things. There is a drastic difference between children who have these experiences and those who don't.

Such games demonstrate dramatically and interestingly, what children need to learn about the image message of television.

Mari Lee Newton - Middle School Level

English Teacher, Monona Grove High School,
Monona Public School System, Monona, Wisconsin

Mrs. Newton has the unique opportunity to teach video production to middle school children during summer session, in preparation for later experience at the high school level, which she also teaches during the regular year. The basic premise of her four-week summer session is to provide a wide ranging opportunity for children to get hands-on experience and do TV. "They cannot be critical," she says, "without understanding this; without making choices; and learning about the different implications of these choices." While learning about these concepts, there is also an ongoing discussion of vocabulary, and various verbal and other skills are learned. Both Mr. Ginsberg and Mrs. Newton stress the importance of integrating the teaching of the skills for visual literacy within the regular school curriculum.

Students are given the opportunity to experiment with their scripts, shooting them in a variety of ways, from different angles, focusing on only a small part greatly enlarged, or showing only a piece of the action. They find out about the power of the camera to alter the perception of the viewer. Through these examples, a great deal of time is spent showing the students how they are always making choices. The students also learn about patience and perseverance. Christina, a student of Mrs. Newton, speaking at the workshop, focused on this part of her experience as she described the student's-eye view of the trials of script writing, group coordination and how "some days you only get two scenes done the entire day."

As a teacher with the student's learning process in mind, rather than the quality of the product, Mrs. Newton emphasized that she allows the students to make mistakes. "There are no right or wrong answers to the teacher. But if a student has the camera aimed at the speaker's feet during an interview, the result is dramatic." Rather than preventing such misjudgments, she lets the result speak for itself.

Mary Moen - Senior High School

Communication Arts Teacher, West Senior High School,
Madison Public Schools, Madison, Wisconsin

Mrs. Moen described first her basic media course which she has evolved through sixteen years of development and fine-tuning. An elective for 10th, 11th and 12th grade students, its "total focus is to make them better critical consumers of the media. This knowledge will be useful no matter what the student's future career choices."

Establishing such a focus as a public school teacher has been a gradual process based on understanding both the role of media in the students' lives and the function of American education. "In order to justify a course in broadcast media when the hue and cry has been 'back to basics,' one must demonstrate that an understanding of the media is basic to contemporary life," said Mrs. Moen.

With this concern in mind, four principal objectives guide the content of the course. They are:

(1) to increase the student's understanding of the communications process and the media he consumes.

(2) to increase his awareness of the effects mass media have on the individual and society.

(3) to develop an awareness of the public's influence on mass media, of the individual's responsibility, and of how he can affect the media.

(4) to become a more knowledgeable critical consumer of the media.

The course emphasizes a "hands-on" approach. Using classroom activities, it begins with a study of how broadcast media operate, their role in society and a better understanding and appreciation of broadcast media. Through guest speakers, script writing and "mini-productions" of both radio and TV, students experience the process of media production, and learn to appreciate and evaluate them and become better critical consumers.

"This is an appropriate course for anyone," says Mrs. Moen, of course, "including those interested in studying communications in college or entering the communications field." However, many students, finding the semester course just a "teaser," requested more. The school responded, two years ago, by allowing Mrs. Moen to create an advanced production course. This course emphasizes media as a career and is designed "to enrich and expand a student's skills in audio and video production." Students explore all aspects of the industry, from writing and production work such as editing, camera, audio and talent, to sales and media advertising. They produce work designed to inform the community about school issues, do video work for other classes and school sports, receive expert advice from guest professionals in the community, including the network affiliates, and finally produce radio and TV spots and Public Service Announcements, the best of which is chosen to be shown on a local TV station.

To illustrate the level of learning achieved, Mrs. Moen spoke only a few minutes herself and turned the major part of her allotted time over to two students from her Advanced Media Production class -- one a junior, the other a senior. Kendra and Steve took the audience through a lively synopsis of the entire course, beginning with its objectives, to the fresh, first-hand accounts of their experiences and discoveries; from the infectious enthusiasm of their obviously popular teacher to the lasting impact which their own PSA productions (on drug abuse, and on drunk driving) had made on them.

Kendra and Steve demonstrated the success of the course through their poise, the quality of their presentation and most of all, through their grasp of the objectives and benefits gained: "Now we care enough to try and put more into what we do, since these are issues we are interested in as teens. When Mrs. Moen asked us to do this presentation, we weren't sure what to say. Then we were amazed how much we remember from these two courses. Most especially, how to use the media and not let the media use us."

Dynamic Viewing—Developing Effective Computer Screens for Computer-Assisted Instruction

by

CANDICE M. ZACHER

As computer usage for instruction increases, the on-line screen design must be developed to offer easy yet effective transmission of information to the learner. How screens are organized can make the difference between a user feeling in control of his/her learning experience or feeling frustrated and at odds with the whole computer world.

Computer-assisted instruction(CAI) can be planned and designed so that it provides a steady pathway to acquiring new knowledge. Attention to basic graphic design and learning principles is one way of accomplishing this task. These developmental activities are crucial for the effective delivery of computer-assisted instruction.

This papers considers four areas in designing CAI screens: 1) the benefits of effective screen design, 2) the steps used to developed CAI, 3) examples of learning principles applied to screen design and 4) design and screen features.

BENEFITS OF DESIGN GUIDELINES

Two groups share in the benefits of screen designs that follow some minimum set of guidelines. The two groups are the actual users of the programs; the learners, and the designers/developers of that CAI program.

Screen displays that are consistent assist users in learning. Dean and Whitlock(1983) described screens possessing a "house style" as giving students more confidence as they take different courses using CAI. Another benefit to students is that the readability level of the screen is increased if they are organized effectively.

Designers of CAI also benefit from the use of guidelines. One immediate advantage for this group is that it provides standards from which to work. Less time is consumed in pondering different arrangements of needed information. Ultimately, these program guidelines help produce more effective user learning because the screen development has been based on sound learning and design principles.

These guidelines, however, are not to be regarded as inflexible rules. For example, modifications or revision of any guideline should be considered in order to meet the needs of a particular audience for whom the CAI program is designed.

BRIDGING THE GAP BETWEEN IDEAS AND CAI SCREENS

Planning and preparation are an integral part of CAI screen development. Often times, it is the one most neglected. There are a series of steps one should go through, more or less, systematically to insure that the optimal effectiveness of a CAI program is achieved. The phases that should be addressed include the following:

1. ASSESSMENT: The first and most important step in developing effective CAI program and screens is assessing the instructional problem. Questions such as these should be asked before full scale time and development is begun on the CAI program. What are you trying to get the learner to achieve? What information must the learner know? And is CAI a sensible solution to this problem?

CAI can be divided into two types of instruction: programmed learning and problem-solving activities. Programmed learning generally is aimed at the lower level cognitive skills. It is typically used for drill and practice(i.e., math problems, vocabulary), tutorials (typically a linear program of new or remedial information) and simple games (i.e., spelling, matching). Problem-solving programs are capable of reaching the higher levels of cognitive procesing. Examples of this type of CAI include: simulations (developing strategies for various subjects), data analysis (developing data bases or spreadsheets of information), and data retrieval and manipulation(utilizing data files to manipulate such things as "if...then" statements).

Once you have determined that CAI can solve your instructional problem, further analysis proceeds in the development of the CAI program.

2. ANALYSIS: The next phase of development involves analyzing the audience. Within this context, various constraints and resources must be investigated as well to insure proper development of CAI. Audience characteristics have to be identified. Such characteristics as:

* educational level
* reading level
* prior knowledge
* attitudes
* age
* cultural and socioeconomic factors

must be examined so that CAI learning tasks and screens reflect the needs and styles of the learner.

Once the target audience has been described, the resources and constraints must be appraised. Many times developers feel they are dealing with more constraints than resources! Nevertheless, it is a good idea to be aware of these constraints so that later decisions can be made effectively.

Typical constraints that may effect CAI screen development are:

* costs
* time
* personnel
* equipment
* scheduling problems

Resources may include:

* teacher preparation time
* media specialist involvement
* curriculum development teams
* time
* equipment
* student help

The actual development of the CAI program and screens are not begun until more steps are worked through in this building process.

3. SPECIFICATIONS: At this point, the specification of objectives and organization of the learning sequence and content occurs. Three major benefits are realized by writing objectives. One is they act as a guide for content and lesson sequencing. Second, they help in the design of the CAI program and screens. Finally, they serve as the basis for evaluation of the learner at the end of the instruction. The learning sequence developed from the objectives serves as a type of roadmap that provides the content details for the programs. From this sequence, the actual content is written.

Each of these three activities provide the basis for identifying graphics or visuals that can be incorporated into the CAI program. The "roadmap" gives a clear picture of where computer graphics can assist in conveying information.

4. TRANSLATION: Now that all the essential materials have been identified and described, this information is translated to CAI screen forms (see Figure 1). The form is an exact translation of the columns and lines available on the computer screen. The form is 80 columns across by 24 lines down. The use of these forms not only helps the developer plan the content and graphic layout for the screens but makes it easier to write the program. The developer can basically preview what screens will look like from these forms while the programmer knows exactly where each bit of information should be located on the screen since the form corresponds to the actual screen size.

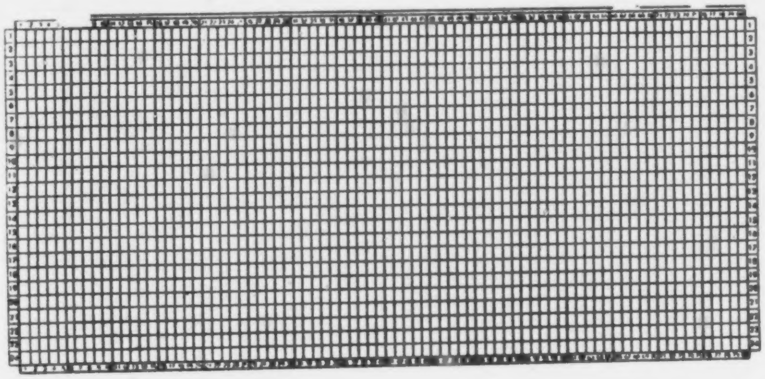


Figure 1. Screen Layout Form

Once the forms have been completed, a thorough examination of them serves as a final check before the forms are used for programming. Modification of screen forms is easier at this point than waiting until the program has been written.

5. DEVELOPMENT/TESTING: In moving onto the actual programming of the CAI screens, the previous steps have provided the necessary foundation for producing the computer program. Once the program has been written, testing occurs for several reasons. One reason is that programs just never seem to ever run right the first time! Time must be taken to verify the correctness of content and visuals with the screen forms as well as to verify that the program is doing what it was intended to do. Another reason for testing the program is to examine the visual layouts. Sometimes what looks good on paper just is not visually appealing on the screen. Corrections and changes can be made during this testing phase.

6. IMPLEMENTATION/EVALUATION: After the program has been tested and approved, scheduling its use and incorporating it into lessons occurs. In order for teachers/trainers and learners to use the CAI program, some information sessions or "user edu-

cation" may be necessary. Once the CAI program is being used, teacher and students should evaluate it. Two types of evaluation are possible. One type is of the CAI materials itself; the other is on student outcomes. Did students learn from CAI? In the event that results of the evaluation indicate that it needs to be revised in some way, measures should be taken to correct these discrepancies. If the evaluation was favorable, the CAI program can be reused and recylced through the implementation/evaluation phase again.

In summary, the purpose of this systematic approach is for the developer to design screens that effectively convey and communicate educational ideas.

APPLYING LEARNING PRINCIPLES TO CAI SCREENS

Since CAI screens can communicate facts, principles, and skills, learning principles that explain ways in which materials are learned can be applied. A variety of approaches or concepts may be useful in creating screens that aid learners in the retention of information.

The approaches listed below are just some ways in which CAI screens can be designed more effectively:

* include a variety of presentation stimuli
* use manding stimuli
* use meaningful examples
* develop advance organizers
* increase active learning
* provide motivational cues
* require use of previously learned materials

1. VARIATION IN SCREEN STIMULI: These variations may include the use of color, animation, novel characters, or size of type. Screens that can elicit the orienting response (ie, "What is it?") can increase a learner's retention of materials. Methods of arousing a sense of discovery or curiousity are examples of this orienting response stimuli. Screen designs that use contrast or slow disclosure of information are examples of translating these principles through the use of visual displays. Changes such as these, if not too overly complex, can actually improve learning.

2. MANDING STIMULI: Skinner(1957) described a manding statement as one that has a highly probably consequent associated with it. For example, if a learner is to pay close attention to the next screen, the screen could display this message in larger type, "Pay special attention to the next screen of information." This type of statement has a higher consequence associated with it --- namely, students will attend to what will happen next.

3. MEANINGFUL EXAMPLES: Information is easier to encode for remembering if familar examples are used in CAI. Another helpful way to insure retention is with the use of concrete words rather than abstract descriptions of ideas. Many times these concrete examples can be combined with a visual representation of the content to also help in remembering.

4. ADVANCE ORGANIZERS: Before the learner starts using the CAI program, a screen can be used to identify what the student will learn during the program. A list of objectives or list of pertinent ideas that will be described increases learning. With the aid of the computer, each item in this list can be revealed one at a time which allow for greater attending by the learner.

5. ACTIVE LEARNING: Methods that increase mathemagenic behavior on the part of learners promote retention. For example, inserting questions to stimulate is one way of getting students to actively participate in the CAI program. Having students select the correct visual that completes the overall display is another way of involving the student.

6. MOTIVATIONAL CUES: Telling students that the next series of screens will be difficult or that the ideas presented are important are some ways of providing cues that motivate the learner to attend to the CAI screen. These motivational cues can be designed using different colors or a computer graphic character that aids in student attention.

7. INCORPORATE PREVIOUSLY LEARNED MATERIALS: Screens that elicit student responses of already acquired information aid them in retaining information. Relating this information to new examples also facilitates in better retention.

In summary, any one or combinations of these methods should be a goal of CAI screen development.

LINKING THE VISUAL STIMULI

The basic communication model in which messages are transmitted and recieved is expressed as follows: MESSAGE(SENDER) --- CHANNEL(MEDIA) --- RECIEVER (AUDIENCE). It can be expanded to include the EFFECT(RESPONSE) the message has on the individual. It is not surprising that this expanded process resembles many models behavioral scientist use to describe how individuals learn. It is generally referred to as the Stimulus/Response (S/R) model.

The S/R model is important because CAI screen design is communication in visual form. The channel, and ultimately the response, in the behavioral scientist model is the primary goal of screen design. The objective of screen design is to cause a change in the behavior of the audience(learner). We want students to change their behavior, whether it is to comprehend and remember a series of facts or acquire the necessary skills to manipulate something.

There are a series of basic design principles that can help in achieving this main goal. Which principles are used and to what extend depends largely on our knowledge of the audience(learner) and what they need. These principles serve as guides rather than steadfast rules.

Some design principles to be included in screen design are: eye flow, balance, space, contrast, color, texture and size. The CAI program can use words to communicate a message but the overall screen layout which can use visual images should use design principles to interpret and enrich the words to help facilitate student learning.

1. EYEFLOW: We read information from left to right and top to bottom. Consequently, our tendency for visual layout is the same. Our eye scans the computer screen looking for order and a focal point. In general, visual images attract our attention before the printed word. Therefore, as a designer of a CAI screen, attention must be given to the general layout of the screen. The general layout can be effected by any of the following design principles.

2. BALANCE: Formal and informal balance are the two main categories of arranging visuals in a screen composition. (See Fig. 2). Formal balance is symmetrical. What appears on one-half of the screen also appears on the other half. This arrangement may involve both print and visual images. Although this is the simplest way of organizing a screen, it does have the tendency to become boring. This situation can effect how the learner acquires and retains information. Consequently a combination of formal and informal screens may be advantageous.

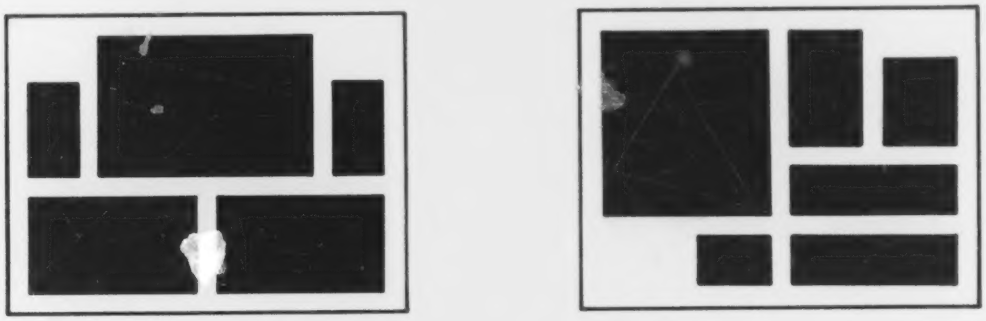


Figure 2. Diagram of Formal & Informal Balance

Informal balance on the other hand, is assymmetrical. The feeling of balance is achieved by the "eye" of the viewer. Although the arrangement is not a mirrored image of itself, the "eye" feels the screen is organized in a "balanced" fashion.

3. POSTIVE/NEGATIVE SPACE: Developers of CAI programs may have a tendency to ignore the role space plays in a screen layout. The positive space on a screen is the content and visuals while the negative space is the background. (See Fig. 3). The background is often referred to as the "white space" and should be considered in the overall screen design. For example, too much dependency on positive space can cause the viewer's eye to roam endlessly and end up missing relevant information on the screen. While too much "white space" can have a similar effect with the viewer's eye floating around the enormous empty background. The answer should be obvious --- a happy balance between the two helps the learner understand the information presented on the screen.

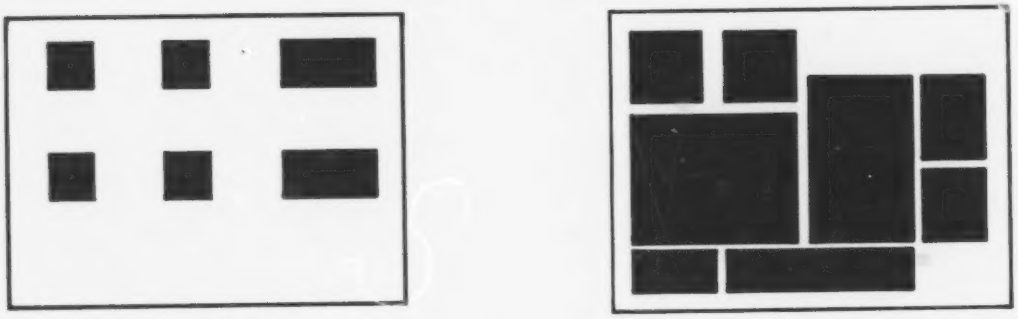


Figure 3. Example of too much and too little negative space.

4. CONTRAST BY COLOR, TEXTURE AND SIZE: Screen images can be differentiated and varied by using color, size or texture.

Color is one of the easier ways to add interest and hold the attention of a learner. The color computer monitor is identical to a TV screen in that it is composed of three kinds of color points: blue, green, and red. These three colors can be combined to recreate all types of colors and values. To the eye, pure colors are the easiest to see and comprehend while shades of colors are harder to differentiate.

Although color is one of the easiest and quickest ways to stimulate and arouse attention, it may not always be the "right" solution for conveying a particular pedogogical question. For instance, the use of texture on a monochrome screen may be an effective alternative. Images such as equipment parts may be easier to understand and comprehend with the use of a textured screen layout than full color. Texture is selective. It helps distinguish between areas and it avoids confusion. It helps in ordering information. In other words, one area is not downplayed by another area: the sum is equal to its parts.

Finally, size provides another excellent method of conveying information on the screen. Larger sizes take precedence over smaller ones. In other words, they create a visual hierachy which favors certain images over others. If a particular image is important, the size it has in relationship to the rest of the screen is crucial. This concept can also be extended to words on the screen. For example, important words or manding stimuli can all be sized to convey the appropriate message to the learner.

The most effective form of screen designs are those that utilize some or all of these design principles. By combining them with the behavioral scientist's model of learning, the CAI screen messages not only will be varied and appealing but provide the stimulation needed to facilitate the user's learning.

PUTTING IT ALL TOGETHER

Although there are still other principles of learning and design that can be utilized in developing CAI screens, those described thus far should be considered and used when suitable to the audience and content.

The developer must also be aware of inherent screen features that can have an influence on screen presentations. Items that should be considered fall into two categories: text and graphics.

TEXT CONSIDERATIONS

1. Consistency: Make certain the layout of the screen and the keys that are used to perform functions are consistent.
2. Abbreviations or jargon: Until your user is familiar with all terms, don't use them.
3. Data entry areas: The areas in which the learner needs to input information should be separate from the rest of the text.
4. Line length: Screens should not resemble the printed page.
5. Menus: If you are using menus, place the most frequently chosen options at the top of the list.
6. Upper/lower case: Use both -- all-capped words are harder to read.

GRAPHIC CONSIDERATIONS

1. Screen size: Most screens are 80 characters by 24 lines. Use the screen space effectively.
2. Scrolling/split screen: Some information may be effectively conveyed by either of these methods (if not done in excess.)
3. Color: Avoid using alot of bright colors on the screen.
4. Revealing graphics: Try to have objects build on the screen.
5. Animation: If using animation, have users begin the movement after reading the text on screen.
6. Highlighting: Don't overdo highlighting of text. It should be used to stimulate and draw attention only.
7. Graphics vs. pictographs: Both can be used effectively. When describing comparison, try to visually represent the information as a graph. When describing objects, try a picture or drawing.

CHECKLIST FOR THE DEVELOPMENT OF CAI PROGRAMS/SCREENS

1. Assess the problem.
2. Identify CAI as a valid solution.
3. Analyze the audience, constraints, and resources.
4. Develop objectives, program sequence.
5. Organize content and identify visuals for screens.
6. Translate all information to screen layout forms
7. Write CAI program.
8. Test and debug program.
9. Make modifications to program.
10. Schedule teacher/user education if necessary.
11. Implement use ofprogram.
12. Evaluation program and learning.
13. Maintain or revise as necessary.

SCREEN FEATURES

Screen size: Most screens are 80 characters by 24 lines. Use the screen space effectively.

Scrolling/split screen: Some information may be effectively conveyed by either of these methods (if not done in excess).

Color: Avoid using alot of bright colors on the screen. Background colors that are easiest on the eyes are white, gray, yellow, green and blue.

Revealing graphics: Try to have objects build on the screen after which text is presented.

Animation: If using animation, have users begin the movement after reading the text on screen.

Highlighting: Don't overdo highlighting of text. It can be used to stimulate and draw attention but too much of a good thing is annoying!

Graphics vs. pictographs: Both can be used effectively. When describing comparisons, try to visually represent the information as a graph. When describing objects, try a picture or drawing.

Format: Keep in mind consistency of screen formats. Users appreciate knowing screen formats are similar in nature. Data entry areas should be located in one section away from the rest of text.

Upper and lower case: Use both. It is easier to read than all caps.

Line length: Screens should not resemble the printed page. Try to limit lines to a maximum of 10 words.

CONCLUSION

Both developers and students will gain from the application of these learning and design principles. The combination of these sets of principles can provide the guidance needed by developers in producing CAI screens. The use of these guidelines are a part of the building process described here. By the time the screen layout forms are produced, the content and graphic ideas should have been analyzed sufficiently so that modifications generally only occur in the test phase.

The exact methods or strategies used in CAI screen development must reflect the target audience and the knowledge or skills to be learned. However, the overall design process such as suggested here must be adopted, or at least adapted, to produce effective CAI screens.

REFERENCES

Dean, Christopher, Whitloch, Quentin, A Handbook of Computer-Based Training, Michaels Publishing Co., New York (1983)

Gaze, N.L. & Berliner, D.C., Educational Psychology, Houghton Mifflin, Geneva, Illinois (1979)

Heinich, R., Molenda, M., and Russell, J., Instructional Media, J. Wiley & Sons, New York (1982)

Skinner, B.F., Verbal Behavior, New York: Appleton-Century Crafts, 1957.

The Power of Electronic Images: Changing Our Relationship to Knowledge

by

DENNIS M. ADAMS
&
MARY HAMM

In Ancient Greece Plato was very concerned with the written word replacing speech as the dominant communication medium. But handwritten manuscripts supplemented -- rather than replaced -- speech as an educational instrument. And with the next turn of the communication screw, the printing press brought literacy to a mass audience. The graphic beauty of old manuscripts may be missing from printed books, but handwritten messages remain important.

James Joyce, who refused to be distracted by typing his own work, said that he liked to feel the words flow through his wrist. In spite of word processors many writers feel the same way today. Others have moved to electronically produced print. A few have gone further yet and have begun to grapple with the creative magic that can be grasped through electronically produced images.

Each successive communications media has changed our relationship to the world of ideas. In the days of nearly total illiteracy, woodcuts, paintings and images hung on church walls were a prime mode of communication. More recently, comic books have been a bridge between visual imagery and print. Now electronic imagery has become our dominate communication form. Television has helped change the communications hour of a few decades ago to 30 seconds today. Our electronic media have given us a new media metaphor shift as substantial as anything in the past.

It is no secret that new forms of electronic media are re-shaping American culture. Just as spreadsheets, telecommunications, memory chips and computerized data have changed the way business is conducted, television has infiltrated every aspect of American life. As society moves from print to electronic information and entertainment, behaviors, lifestyles, and patterns of thinking are undergoing changes. One of the most obvious is the way we receive information.

Politics, news events, education, economics, and the "human experience" are being discussed and read about less and less (Greenfield, 1984). Through vivid imagery, stereophonic sound, computer-controlled interaction and increasing variety, TV is demanding center stage. Although most would agree that the average evening TV newscast, for example, contains very little quality information when compared to the print media, few are ready to replace it with the evening newspaper.

TV appeals more to the senses and emotions. These pictorial image arrangements are condensed, effective, easily accessed, and powerful. And many of these images are recalled years later with fond memories -- as children used to recall children's books when they become adults. Adults today recall the early days of television with affection -- witness the mid 80's series of programs like "Perry Mason Returns", "Star Trek", and "Return to Mayberry" (Andy Griffith).

An example of powerful, nonfiction imagery was a recent newscast of U.S. troops in Honduras. The image of American helicopters transporting Honduran troops to the border of Nicaragua reminded many Americans of firmly implanted images of Vietnam. It was a bit like a visual equivalent of a tabloid headline. But the image association would most likely have been absent in print as the intent of the news coverage was not to make comparisons between the two events.

Attitudes about print are changing in other ways. Increasingly we are creating a reading public that tends to view reading as a professional task. Nearly a third of American adults can not read this paragraph (Osborn, Wilson, and Anderson, 1985). The notion that reading is a natural activity of all thinking people is gradually diminishing. We are now a culture whose ideas, information and ways of knowing are shaped by television, rather than the printed word.

The Power of Electronic Media for Changing Perceptions

Television is changing the importance of physical reality for children. In fact, "reality" is changing as rapidly as our electronic technology. Children no longer have to be physically at the scene of an event to get the kind of sensory information that used to come from direct experience.

Video imagery and computers almost require children to place their sense of self in a place that is different from their actual physical surroundings. The result is a subtle shift in their perception of the world and themselves. Only part of this shift is to an inferior fantasy world. When the space shuttle Challenger exploded before the horrified eyes of millions of school children many felt that they had been physically present during the accident. The pain inflicted by the nonchalance of technological fate was compounded by visual imagery.

Perception is the framework of concept formation. TV provides potent perceptual experiences. Young children are particularly vulnerable as they attempt to distinguish the real from the unreal. Piaget explains that children rely on their perceptual experience even if their conceptual knowledge contradicts it. Television leads children to accept what is presented, even if contradicted by verbal explanations or personal experiences.

Electronic Realities Can Amplify Traditional Media Methods

What's found in the physical environment is not automatically more valid than what's found on the video tube. Of course we want students doing real experiments rather than just a simulation on the video screen. But we are getting to the point where one can amplify the other.

A characteristic of any effective medium is its ability to change how we use our senses to process thought and perceive reality. Television is particularly vivid. In the ease with which it involves all of our senses, video is unparalleled in the history of communications. With new interactive computer controlled imagery the supremacy of physical proximity is no longer quite as intimidating. We are finding out that the street and the back yard are not always the best teachers.

Whether the video screen is controlled by a computer, VCR, or broadcast television, it is as capable as any other medium (be it speech, handwriting, or print) of inspiring at least as much active cynicism as docile passivity. It all depends on teaching students a kind of critical intelligence.

Equipped with a literate education students can get as close to an understanding of human reality with electronic learning as they can on the street or in books. But to do this requires more than using television programming as the primary source of social imagination.

Helping students explore what we can do with machines and what machines can do to us is important. It is, however, equally important to discuss the social, moral and political significance of technology itself.

The power to recreate reality is built on all sources of mental development. Indeed using electronic windows on the real world (even though we're often looking through refracted glass) can allow us access to these images on our own terms. This requires a balance of print and visual media ecology. How can we make the best use of electronic medium to amplify learning?

A Sample of a Few Practical Methods for Restoring a Balance

There are some things we can do to help students develop critical viewing skills, solve problems, examine the technical systems themselves, and learn through a mixing of varied media combinations.

The curriculum can include the study of history of media -- from cave drawings to computers. Students examine how communication and thinking processes change as the human race has changed dominant communication forms -- from speech to handwriting, to print, and now to electronic media.

Economic and legal concerns can be included as the biases of each medium are explored. The main purposes of such a curriculum are: a) to make it clear that no medium is neutral, every medium contains some intellectual and social bias, b) to help students critically view all media, interpreting media messages in their own terms, c) to develop critical and intelligent viewing skills, and d) to use media as a tool for enhancing learning and thinking.

Here are some specific techniques that teachers can use to encourage students to think critically about media messages:

I. To begin with, we can help students critically view what they watch on television. Metaphors are important in the thinking process, and they can be expressed both visually and linguistically. Students can look for metaphor and simile and critically think about the values in the music videos and other programs they watch. After examining the use of metaphor questions like, "What's gained or lost when you accept the values implicit in these videos?," can be asked.

II. Students can follow a current event on the evening news and compare it to the same event written in a major newspaper. Encourage comparisons between both media. What are the strengths and weaknesses of each? What are the reasons behind the different presentations of a similar event?

III. Explore the technological romanticism and the use of technology for propaganda. How can it be used to persuade and predict? Encourage the students to become more aware of their own thinking process as they are reasoning though the problem.

IV. Have students design a thirty or sixty second commercial on some technological device. Have them perform skits for other children without props or memorization of lines.

V. Select a music video which make heavy use of metaphor and simile and have students analyze it in the same way they might analyze a poem. Discuss production techniques that were used in making the visual imagery (like editing, storylines, computer graphics, lighting, symbolism, dissolves, trucks, pans, and zooms).

VI. Have students put together a list of favorite TV programs. Encourage them to analyze the reasons for their popularity and the messages they send to their audience. Do the same for favorite books and magazines. Look for similarities and differences.

VII. By understanding some of the principles of production students can more fully experience and understand both TV conventions and the wider world. Students can create their own music videos using an 8mm video camera and the sound track of their favorite group. Have students think, plan, visualize and develop a storyboard. Production should first be sketched on paper and revised before shooting.

VIII. Advertisements are presented to students in many forms. These provide a wealth of examples for illustrating media messages. Move children progressively from advertisements in catalogs, newspapers and magazines to television commercials, allowing them to locate features (such as packaging, color and shape) that influence what we have all learned, the hard way, that advertiser's claims are distortions of reality.

IX. Assign students to watch TV commercials during various parts of the day and document which commercials are shown at which times. Encourage them to speculate about TV commercial messages and viewers' response.

X. Discuss toy advertising that occurs during children's programs, especially Saturday morning cartoons. With children, explore toy manufacturers' claims and what can realistically be expected of the playthings.

XI. Have children explore how common visualizations are created with computer-based technology for television news, or TV commercials. Some examples here are logos, page turns, and graphics that show us a political message. How has computer control changed television production? (Some movies like TRON, and music videos make heavy use of computer animation.)

XII. Construct a pictorial time line on computers. Prepare a bulletin board that represents, in pictorial form, the history of computers. Use pictures of both physical objects and personalities involved in the computer movement. Students may want to include some science fiction conceputalizations they've worked out for the future.

XIII. Have students evaluate the software they use. Extend this activity by having the students:

-write a report about an event or incident in the program
-review the program for a magazine
-make up a student guide for the program, using their own directions and illustrations.

XIV. Only a proper awareness of the values embedded in the technology that fills our environment will allow us to decide on its proper place in human society.

Pull a technological dilemma from the newspaper (for example biotechnology, atomic power, computer databases). Make sure that the situation is structured so that you have over 30% of the class on an opposing side. Have students divide into groups of 6 or 7 (on the basis of the position they took) and come up with the best reasons to support their position. (The class could be called back together for a whole class debate.)

XV. Mapping activities and word associations build on neglected visualization skills. Following are a few examples of mapping activities.

Using a book or magazine article:

1. Print the title or main idea of the chapter, section or paragraph in the center of the page. Circle it.

2. Have students generate questions or ideas they expect the circled topic to deal with. Print these ideas and questions on a line that's connected to the circle around the topic.

3. Instruct students to read the selection.

4. After reading refer students back to their map and the predictions they made. Have them answer their questions and add details to their map.

Once students are familiar with mapping, have them map a news item from a major newspaper (like the New York Times). Generate questions and ideas before reading. Videotape that item on the evening news. Have the students view the news video and complete their map. Then refer them to the newspaper article on the same event. Encourage them to add new details on their map using a different colored pen or pencil. Compare both sources of information.

The Role of Education and Media

The problem with much of our current visual technology (especially television) is that it fills our heads with isolated fragments of fact but does not provide the context that would give these facts meaning. Yet it is increasingly apparent that these technologies should not be taken lightly or dismissed by educators. People at all levels are influenced by broadcast television. Through television we grieved collectively over the tragedy of the Space Shuttle and influenced our government's actions in the Philippine elections. TV didn't create reality, but certainly influenced it.

New forms of electronic learning may be more powerful, but they are no more or less likely than other curricular techniques to cut children off from either their real or imaginary roots. TV alone is a visual medium that can suppress speech and the written word. But computer control changes the scene. We can mix print and speech -- and take interactive control. Computers may now communicate primarily through a video screen, but already we are seeing more use of speech and the written word. As this progresses the difference between the real (physical) and the unreal is becoming blurred.

The most hi-tech curriculums and advanced classrooms must be matched by the positive effect of competent teacher preparation. It takes teacher training to put learned thoughts and principles into action. When it comes to education of the young, media technicians, scientists, humanists, teachers and parents share a common cause in rejecting any media or techniques that cheapen thought. Consciously or unconsciously, we are all involved in the education of children.

New electronic means (along with effective teaching strategies) can enhance speech, writing, and print mediums already in place. Using high-technology tools, competent teachers can help children to imagine, create and reach new learning and thinking plateaus -- not to escape, but to get closer to hidden realities.

As technology advances (as computers get more verbal and communicative, for example) we see a dissolving of the distinctions between speech, writing and reading print. This in turn, creates new media realities. Various hybrids are already developing that mix video imagery, print, handwriting and speech.

It is up to us to reach the potential of this promising technology and to apply what we know about effective instruction. The technology can, after all, be used to amplify learning. It can also be one of the tools used to revitalize teacher education. We would do well to remember that the entire curriculum, no matter how advanced technologically, must be filtered through the mind of the classroom teacher.

Equally as important we need to become awakened to the ways that various media formulate our conception of world events, other cultures, our personal environment, our behaviors and thinking styles. Armed with such knowledge we will be better able to interpret the symbols of our culture and extract meaning from our varied media technologies. This knowledge of the electronic medium -- and how to utilize it for learning -- will help propel us into the third millennium.

References

Adams, D. (1985). Computers and teacher training. New York: Haworth Press.

Adams, D., & Fuchs, M. (1986). Educational computing: Issues, trends, and a practical guide. Springfield: Charles Thomas Publisher.

Greenfield, P. (1984). Mind and media: The effects of television, video games and computers. Cambridge: Harvard University Press.

Osborn, J., Wilson,P. & Anderson, R. (1985). Reading education: Foundations for a literate America. Lexington, MA: Lexington Books.

Image-Word-Image

by

RUNE PETTERSSON

Abstract

The report discusses the relationship between text and images and the interpretation of messages.

Empirical studies comprising 7,500 perceptions/expressions by 400 subjects are described.

- Both text and images can be designed and perceived in many different ways.
- Pictures intended to serve as information should always be provided with a legend.
- There are always several ways of achieving a satisfactory level of communication.

1. Image - word

In a series of experiments Snodgrass & Vanderwart (1980) had 219 subjects name 260 stylized line drawings with concrete contents, such as a doll, finger, fox and trumpet. Even though most subjects employed approved synonyms, no fewer than 52 "standard pictures" were still not named as anticipated (20%).

One of the tasks of 80 subjects, selected at random, in a study of "Intended and perceived image content" (Pettersson 1985.1) was to provide a brief description of the contents of 10 pictures. The pictures were designed to depict the abstract subjects "courage," "togetherness," "credibility," "suspiciousness" and "aggression." A very wide spread was found in the way people perceived picture contents and very poor agreement between intended and perceived content. On the average, only 12.5% of the anticipated "key words" were used for the 800 descriptions. When subject descriptions were compared to the respective synonyms, near-synonyms and related words (25-34), the number of "hits" increased, but only to an average of 20.1%. A detailed analysis of the other words, i.e. the "non-anticipated" words, disclosed that 80 subjects utilized 1406 words (for their 800 descriptions) which can be regarded as "key" or "index" words. The number of index words varied between subjects and pictures. A total of 376 different index words, i.e. 0.5 per subject and picture and more than a fourth (26.7%) of the total number of index words. The number of different index words ranged from 31 to 51/subject with a mean value of 37.6. The four most common index designations for each respective picture accounted for more than half of all the index designations. Most of the designations were only mentioned one or a few times (Fig. 1). Concrete, descriptive designations predominated, but more than one-third of the index words can be regarded as abstract.

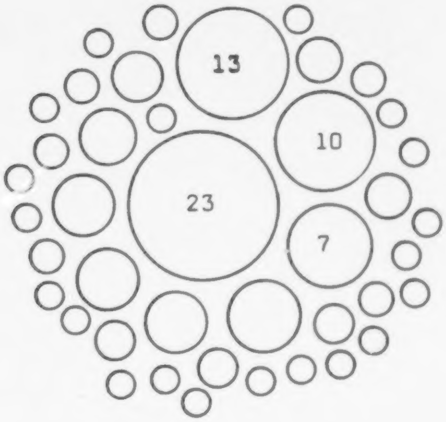


Fig. 1: Average percentile distribution of the number of index words in relation to the total number of words. The smallest circles represent individual words.

In another experiment, the 14 students taking an "Interactive Systems" course at the University of Stockholm were given the following task: "These ten pictures are to be filed in a picture archive. Write one or more index words for each picture." The concrete subjects of the pictures were "two house martins in flight," "a young tadpole," "a squirrel with a nut between its front paws," "a gnawed spruce cone," "a bird nesting box," "lynx" with prey," "fox family," "animal in salt water," "cep" and "blue tit." The students produced a total of 278 index words. On the average, the most common term was selected 10.4 times per picture, i.e. by three-fourths of the subjects. This is equivalent to more than a third of the average number of index words. The second most common index word was selected half as often and by a third of the subjects. Most terms (73%) were only mentioned once or twice. Concrete, descriptive terms predominated. Abstract terms were only used a few times.

In a subsequent experiment, twenty-two students taking a course in visual communications at the University of Stockholm were asked to supply detailed descriptions of five simple illustrations (Appendix). These concrete subjects showed "two house martins in flight," "a young tadpole," "a squirrel with a nut between its front paws," "a gnawed spruce cone" and a "bird nesting box." The descriptions were to be devised in a manner making it possible for one or more artists to recreate the pictures. Descriptions of the respective pictures turned out to be strikingly different in execution and details. Descriptions comprised 15 to 290 words (mean values 57 to 121 words) (Fig. 2).

A picture always has a graphical execution and a content, both linked as intimately as body and soul in Man. Each structure has a content and each content has an execution. A picture with a simple content may have a simple execution, as is the case with e.g. signs. A picture with a complex content often has a complex execution, as in e.g. many nature pictures. However, a picture with a complex structure may also contain a very simple message. Art often strives to express complexity by simple means. A balance is the objective in information production, i.e. harmony between content and execution for maximum impact.

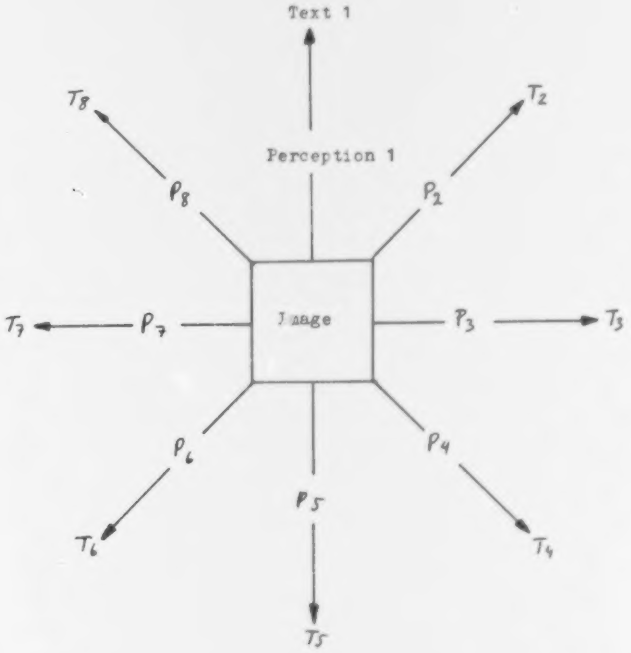


Fig. 2. Picture perception is relative. Different people perceive and describe one and the same picture in different ways.

The emphasis in a picture's legend should be on the picture's content, i.e. the legend should be redundant. A legend may well be relevant but must never be irrelevant or contradictory. A picture description should obviously supply information on picture content, but the emphasis should be on picture execution. After an initial overview, i.e. a summary of the picture's main contents, a legend should supply a detailed description of each picture element. The elements should be described in their order of importance to picture comprehension.

The emphasis in the first three experiments cited above was on picture content. Emphasis in the fourth experiment was on picture execution. These four studies revealed the following:

- Picture perception is relative. Different people perceive and describe one and the same picture in different ways.
- Verbal depiction of the content and execution of even simple pictures requires relatively long descriptions.
- Pictures with abstract contents can be perceived in more ways than pictures with concrete execution.
- Abstract content is expressed with concrete execution.

The studies reported above were performed with adult subjects. The findings probably apply even to children and youths. However, the fact that children normally have a less well-developed verbal capability than adults, the measurement methods used here cannot be used on children with absolute certainty.

2. Word - picture

When school children are asked to draw a given subject/content, their results are often extremely varied. The Swedish Children's Picture Archives in Eskilstuna has many special collections, some containing thousands of pictures of the "same subject," although the individual versions differ distinctively and considerably. The aforementioned study "Intended and perceived image content" utilized about five drawings and photographs for each "intended content." The total of 52 pictures differed a great deal. With a few exceptions, ten completely different pictures were produced for each intended content. Abstract contents can obviously be visually expressed in many different ways (Fig. 3). (One experimental picture from each group was selected for subsequent field studies. As a rule, there was considerable agreement about the picture which was best at expressing the intended content. However, the pictures were not perceived identically by subsequent subjects.)

In a subsequent study, 50 students in the Umeå Art Teacher Training Department were each asked to produce five pictures on the basis of detailed, verbal, informative descriptions of the experimental pictures previously used. A teacher read the descriptions aloud, one after another. Students made their drawings at the same time using a pen on white A4-sized paper. About ten minutes were allotted for each subject. The 250 illustrations were subsequently analyzed with respect to "size," the "number of picture elements" and "agreement between description and image." As was the case in the shift between image and words, the shift between words and image displayed wide individual variations. Measurement of the size of individual illustrations disclosed that more than half of the drawings occupied less than one-fourth of the paper surface. One-fourth utilized from one-fourth to one-half of the paper. Less than one-sixth of the illustrations occupied more than half of the paper. The number of picture elements also displayed non-uniform distribution. One-fifth utilized "few picture elements," one-third utilized "neither few nor many picture elements" and about half utilized "many picture elements."

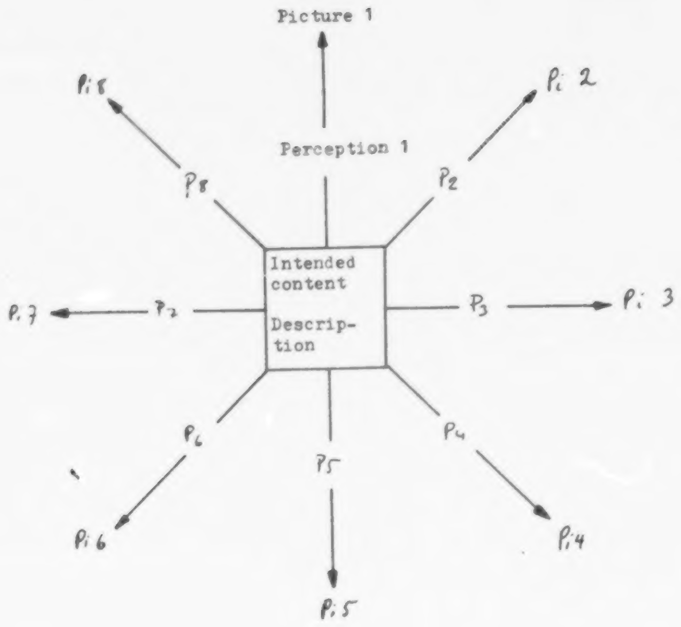


Fig. 3. Intended content can be expressed using many different pictures. A verbal description of a picture is perceived in many different ways and can be applied to many different pictures.

Ratings of the degree of agreement between the descriptions and the respective pictures were distributed relatively evenly between the three categories "good," "fair" and "poor." However, the "bird nesting box" concept deviated sharply from the average since no fewer than two-thirds of the pictures of the concept were rated as "good." Only a few were rated "poor." There are several possible reasons for this. The text describing the nesting box was probably of better quality than the other four texts. The concept "bird nesting box" may have been more familiar to and less ambiguous for subjects than the other concepts. The geometric structure of a nesting box was also easier to depict in a drawing based on a verbal description than was the case for the other concepts.

The Umeå experiment was repeated at the RMI-Bergh school in Stockholm. Here, the verbal descriptions were replaced by printed versions given to each student and were accessible throughout the exercise. A description read aloud disappears rapidly, and remembering details in it may be difficult. So printed descriptions can be expected to yield more detailed pictures displaying greater agreement with the description than pictures based on descriptions read aloud. Measurement of the size of the individual pictures disclosed the same distribution as before. The later experiment produced fewer illustrations with "few picture elements" and more illustrations with "many picture elements." As expected, the printed text resulted in a smaller proportion of illustrations with "poor" agreement and a larger proportion of illustrations with "good" agreement than the descriptions read aloud.

Table 1. Percentile distribution of illustrations in different categories.

Text	Pictures											
	Size				No. of picture elements				Agreement			
	1/4	1/4-1/2	1/2	D	Few	N.F.N.M.	Many	D	Poor	Fair	Good	D
Read aloud - heard	60	27	13	*	20	30	47	-	29	37	34	-
Printed text - read	57	30	13	*	10	31	59	*	15	37	48	*

D = Deviation from random distribution
N.F.N.M. = Neither few nor many
* = significant
- = non-significant

Thus, many of the pictures differed but may still be regarded as "visual synonyms." There are many ways to depict even the simplest object. Many pictures are appropriate to and representative of a given designation (such as "Christmas," "Easter," "flowers," "children," "horses," "dogs," "cats" etc. The depiction of e.g. "Jesus Christ" and "Buddha" is commonplace in the classical art of the respective religions.) The number of pictures capable of depicting a description declines as the degree of descriptive detail increases (Fig. 4).

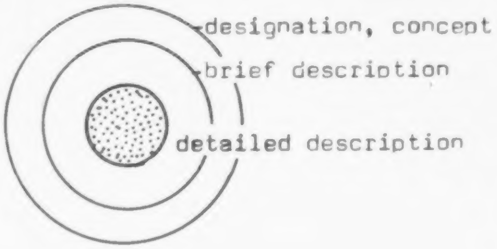


Fig. 4. A large number of pictures are appropriate to a general designation. The number of pictures capable of depicting a description declines as the degree of description detail increases.

These two experiments show the following:

- An intended subject/content can be depicted with many different pictures (Fig. 2).
- Perception of a text is relative. Different people perceive and

depict a given text in widely differing ways (Fig. 3).

- Perception of verbal content is apparently easier when a text is read rather than heard.

3. Interpretation of messages

3.1 Languages

Different "languages" differ in their ability to express concepts with precision and flexibility. Physics, chemistry and mathematics, for example, employ non-ambiguous symbol and equation languages. In verbal and technical descriptions, the language of specialists must be as unambiguous as possible. Languages such as these can only be understood by people with the appropriate specialized knowledge. Normal prose is often open to multiple interpretations, i.e. is ambiguous. Fiction and poetry in particular offer abundant opportunities for individual interpretations. As previously noted, pictures are normally ambiguous too.

A computer can analyze and describe a picture so exactly that other computers (under certain conditions) can reproduce an identical version of the picture. Since every person is a unique individual, their perception of pictures always differs to some extent. There is no unambiguous picture language. In a closed, homogenous cultural group, "ordinary" pictures and texts probably give rise to similar interpretations and perceptions of a specific reality, single object, event, message or content. However, we do not know the magnitude of the individual "tolerance ranges" in which different texts and pictures generate reasonably identical perceptions. One representation may supply a good perception of content by one person but a completely different perception for another person (Fig. 5). However, an interacting legend and image can enhance understanding of content. One study of student perception of text and pictures in lexivision (Melin 1986) showed that pictures were better at expressing contrast and specifications and that texts were better at expressing logical relationships such as cause and effect. Some lexivision presentations utilize the respective advantages of text and image.

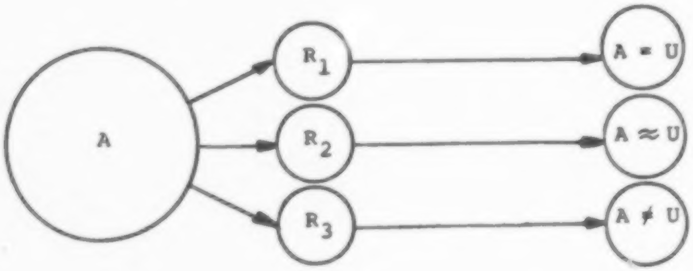


Fig. 5. Different representations. A large number of different texts and/or pictures are possible. The representations convey identical, acceptable or discrepant (U) perceptions of intended content (A).

3.2 Information

Pictures usually contain an overabundance of information. By selecting and utilizing different parts of a picture's information on different occasions, we can experience completely new and different perceptions when we re-see the picture in new contexts.

The total amount of information presented varies very considerably in different media. A typed A4-sized text can hold up to 2,500 characters, whereas a TV image consists of 250,000 pixels whose color content and gray scale can be changed 25 times a second. By editing a text we can reduce the number of words required to convey a "content." The amount of information in synthetized (computer-generated) speech can sometimes be reduced by up to 99% without obliteration of message comprehension. A number of graphic elements in pictures can also be reduced without any major impact on content. We can delete, add or relocate information. Graphic elements which constitute boundaries between different image elements are more important to our perception of the image than other graphic elements. In principle, it should be possible to delete a rather a large number of non-significant elements in e.g. a photograph. As long as some of the significant picture elements are retained, we can still get some idea of image content. So image design can be changed a great deal without any major change in the perception of image content (Fig. 6).

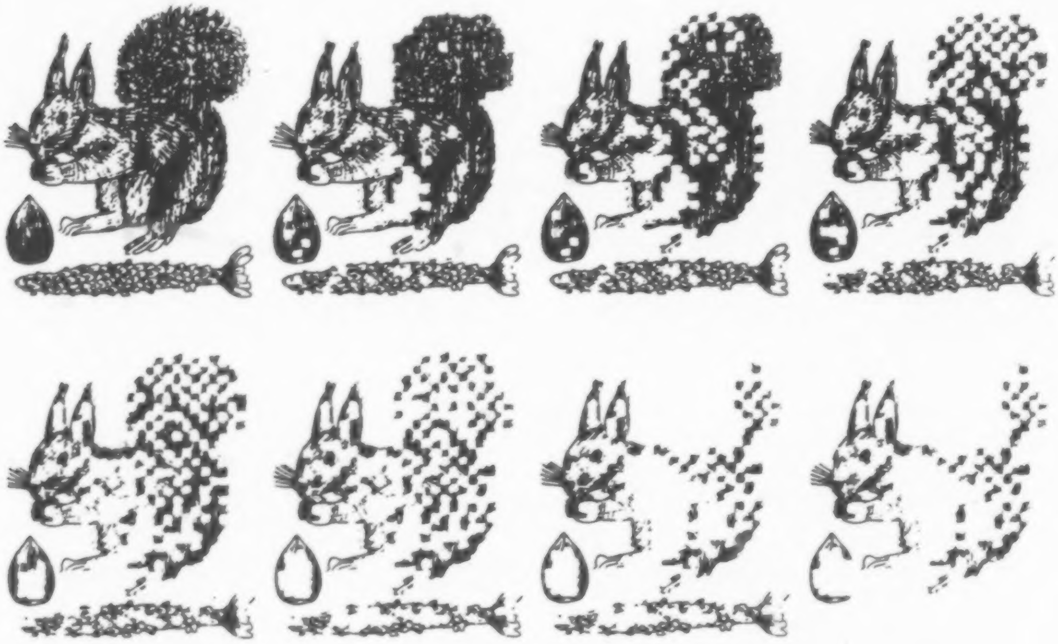


Fig. 6. Image design can be changed a great deal without any major change in the perception of image content. In this example, the amount of information in each picture was successively reduced by ten percent.

BEST COPY AVAILABLE

Since the brain fills in missing information and, in certain instances, atempts to make the best possible interpretation of a given stimulus, certain significant graphic elements can also be deleted from images. Missing lines in cartoons can sometimes be as important as the lines actually used. Employing about the right amount of graphic elements and finding the right visual balance are characteristics of skilled and experienced artists, photographers and graphic designers. Inadequate information results in an inadequate picture. Excessive information results in visual overload making a picture hard to interpret. There is an optimum trade-off for each content and application.

3.3 Legends

An old proverb states that "a picture says more than a thousand words." This is certainly true in many instances. But the reverse may also be true, i.e. "a thousand words could say more than a picture." As previously noted, legends and pictures should interact to provide uniformly in the perception and interpretation of a message.

Ten experimental pictures depicting "credibility," "aggressiveness," "courage," "suspiciousness," "togetherness," "lynx" with prey," "fox family," "animal in salt water," "cep" and "blue tit," i.e. five pictures with abstract contents and five pictures with concrete contents, were shown to students taking a course in visual communications. The students were asked to compose legends which were 1. positive and reinforced image content, 2. negative and weakened image content and 3. neutral and neither reinforced nor weakened image content. Subsequent review of the approx. 600 legends produced this way showed that most legends were redundant (59%) or relevant (35%) (Table 2). A few were irrelevant (4%) or contradictory (2%). Most of the texts differed for the different pictures. Picture legends clearly have an ability to affect our perception of pictures. As a rule, the students succeeded in creating positive, negative and neutral perceptions by varying the different legends. The positive and neutral legends were redundant more often (68% and 67%) than the negative legends (41%). The negative legend had the largest proportion of irrelevant (9%) and contradictory (4%) legends. (Appendix)

Table 2. The relation of legends to pictures (mean value as a %).

	Relation to pictures			
Text	Redundant	Relevant	Irrelevant	Contradictory
Positive	68	29	2	1
Neutral	67	30	2	1
Negative	41	46	9	4
m	59	35	4	2

Picture legends clearly have an ability to affect our perception of the pictures (Fig. 7).

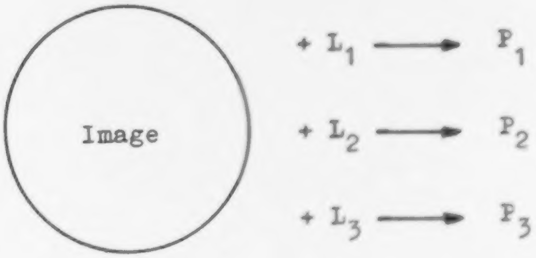


Fig. 7. Perception of a picture is affected by its legend.

The linguistic form, typographic design and location are also important (Pettersson 1985.2). Legends should be written so they can be easily understood by the intended readers. Their typography should make legends readily distinguishable from the main text. As a rule, they should be located under their respective pictures.

4. Conclusions

Legends and pictures are two completely different languages which are capable of complementing one another. Both legends and pictures can be designed and perceived in different ways. The available combinations are virtually unlimited. So pictures intended for information purposes should be supplied with legends. Informative pictures can seldom be clear and unambiguous without legends. There are usually several equally effective combinations capable of achieving satisfactory communications.

The interplay between legends and pictures must be studied in detail before optimum combinations can be found.

5. References

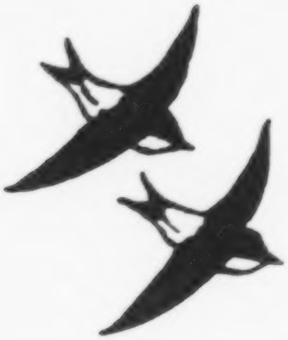
Melin, L. 1986: *Text, bild, lexivision. En Studie i text-bild-samverkan i en lärobok*. Stockholm University, Department of Nordic Languages.

Pettersson, R. 1985.1: *Intended and Perceived Image Content*. Paper presented at the 17th Annual Conference of the International Visual Literacy Association. Claremont, CA. November 1-2.

Pettersson, R. 1985.2: *Interplay of Visuals and Legends*. Visual Literacy Newsletter. Vol. 14, No. 5. Sept./Oct.

Snodgrass, J.G. & Vanderwart, M. 1980: *A standardized set of 260 pictures: norms for name agreement, image agreement, familiarity and visual complexity*. Journal of Experimental Psychology: Human Learning and Memory. Vol. 6/2 pp. 174-215.

Initial picture



No. of words: 20 to 200 (m = 89).

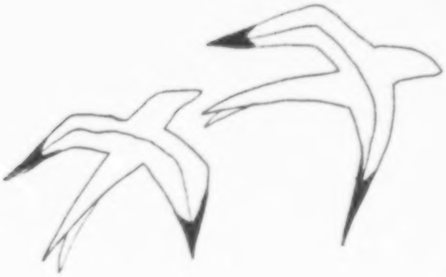
Example of poor agreement between the description and illustration (shown here reduced in size).

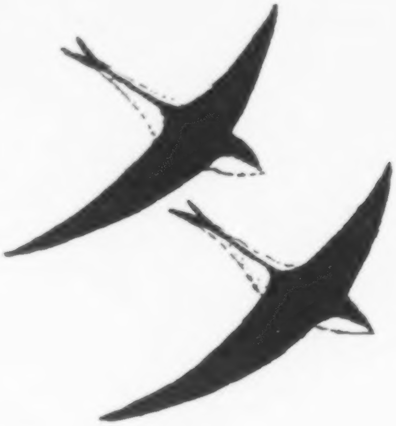
Description

Two house martins in flight

Two house martins, seen at an oblique angle from above, are gliding so their bodies form a diagonal from top left to bottom right. Their wings form two strong diagonals from bottom left to top right. One house martin is flying just above and behind the other. Their tails are a little higher than their heads. Both house martins have the same markings. Their wedge-shaped wings, the upper halves of their heads, backs and forked tails are black. The rest of their bodies are white, except for a thin line extending from the tail towards the posterior part of the left wing. No other fine detail, such as eyes or leg, can be seen.

Example of good agreement between the description and illustration (shown here reduced in size).

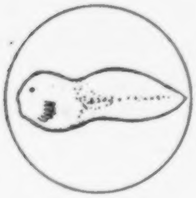




Results. Distribution of illustrations in various categories (%).

Text	Pictures								
	Size			No. of picture elements			Agreement		
	1/4	1/4-1/2	1/2	Few	N.F.N.M.	Many	Poor	Fair	Good
Read aloud - heard	56	30	14	34	34	32	48	30	22
Printed text - read	41	35	24	24	47	29	12	35	53

Initial picture



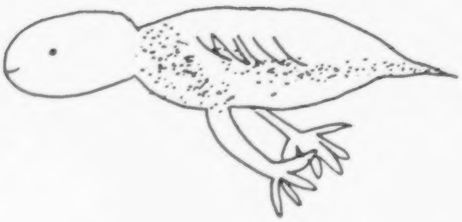
No. of words: 20-230 (m = 88)

Description

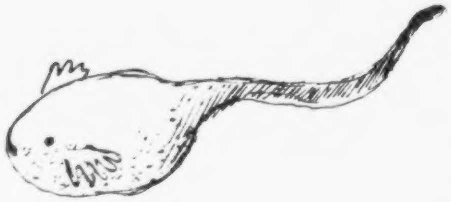
Young tadpole

A tadpole only 6 days old. The tadpole is swimming to the left. Its eye is a black dot on a head comprising about a third of the animal's length. Five, finger-like protuberances represent the tadpole's external gills. They point obliquely to the rear in a white field. There is a hint of a mouth at the far left of the nearly round, slightly oval head. Shadowing, in the form of a pattern of dots, starts in the middle of the area between the eye and gills and extends obliquely to the rear and up to the top of the head. There is also light shadowing below the gills. It extends along the tadpole:s body to the tail where shadowing broadens, merges with upper shadowing and proceeds to the middle of the tail.

Example of poor agreement between the description and illustration.



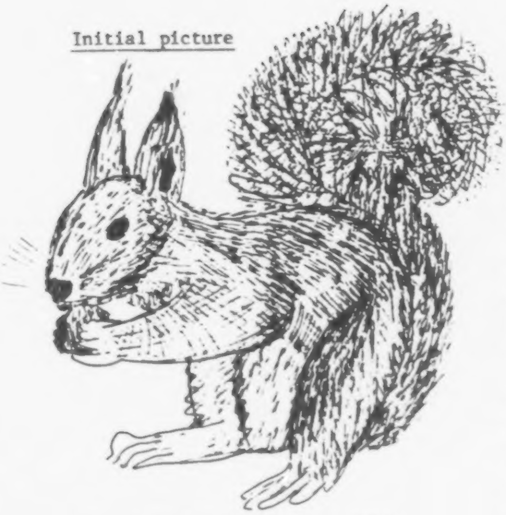
Example of good agreement between the description and illustration.



Results. Distribution of illustrations in various categories (%).

Text	Pictures								
	Size			No. of picture elements			Agreement		
	1/4	1/4-1/2	1/2	Few	N.F.N.M.	Many	Poor	Fair	Good
Read aloud - heard	58	28	14	38	36	26	36	30	32
Printed text - read	76	24	0	0	35	65	12	41	47

Initial picture



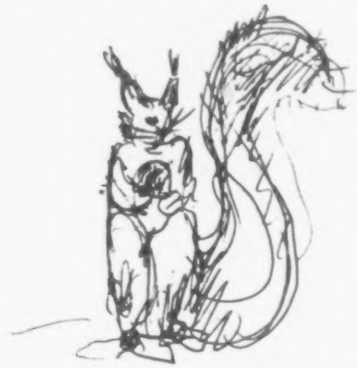
No. of words: 20-290 (m = 121)

Description

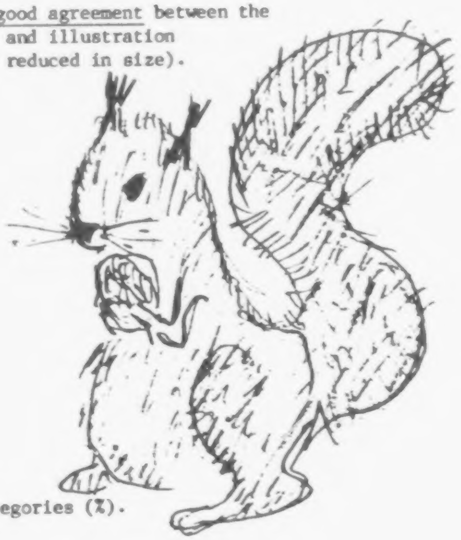
Squirrel with nut between its paws

The squirrel is sitting on its haunches and is seen obliquely from the front. It is grasping a hazel-nut between its front paws and seems ready to begin gnawing on the nut at any moment. The squirrel's body is leaning forward, and its tail forms an S to the right of the picture. The picture is drawn as a sketch. Short lines emphasize the structure of its coat. Its tail is "bushy." The animal's left eye is visible. The eye is black and almond-shaped. The eye is at an angle so the corners point towards the nose and ears respectively. Its nose is black and triangular with its broad side facing up. Thin whiskers stick out on both sides of its nose. The ears are wedge-shaped and topped with a tuft of hair.

Example of poor agreement between the description and illustration.



Example of good agreement between the description and illustration (shown here reduced in size).

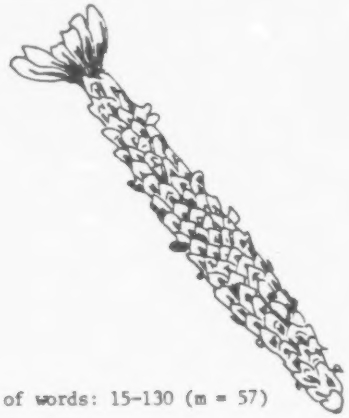


Results. Distribution of illustrations in various categories (%).

Text	Pictures								
	Size			No. of picture elements			Agreement		
	1/4	1/4-1/2	1/2	Few	N.F.N.M.	Many	Poor	Fair	Good
Read aloud - heard	52	30	18	8	46	46	34	36	30
Printed text - read	47	41	12	6	12	82	6	35	59

BEST COPY AVAILABLE

Initial picture



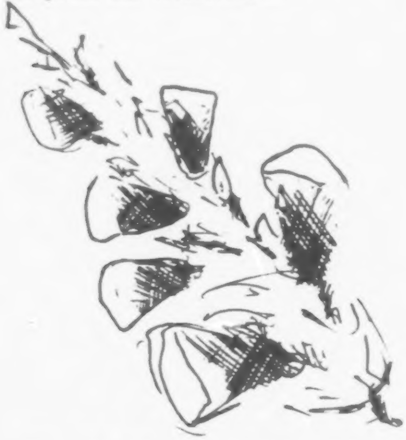
No. of words: 15–130 (m = 57)

Description

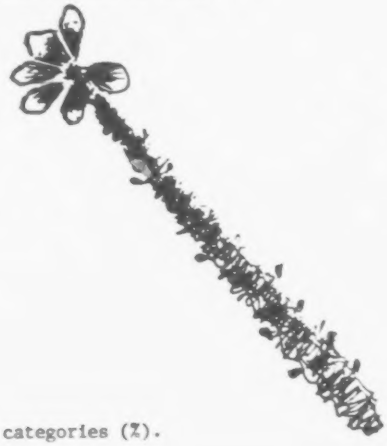
Gnawed spruce cone

This spruce cone was gnawed by a squirrel. The squirrel rips off loose scales when it feeds. This results in a rather "prickly," cylindrical cone. Some of the seeds remain and can be seen as black marks on the remaining roofing tile-like scales. The cone is diagonal in the picture with its tip at the upper left. Six complete scales survive at the tip. They are seen from below, narrow at the base and arrayed like a fan. The scales are black at the base and entirely white at the tips.

Example of poor agreement between the description and illustration.



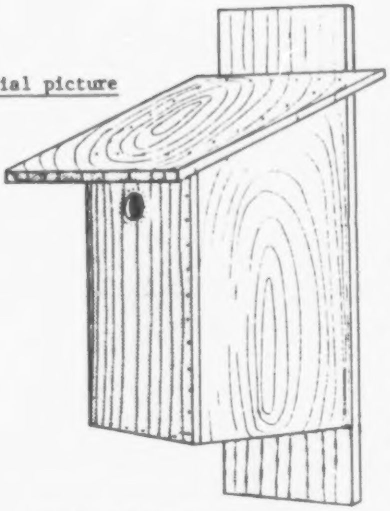
Example of good agreement between the description and illustration (shown here reduced in size).



Results. Distribution of illustrations in various categories (%).

Text	Pictures								
	Size			No. of picture elements			Agreement		
	1/4	1/4–1/2	1/2	Few	N.F.N.M.	Many	Poor	Fair	Good
Read aloud – heard	80	14	6	14	32	54	20	60	20
Printed text – read	80	13	7	7	33	60	40	27	33

Initial picture



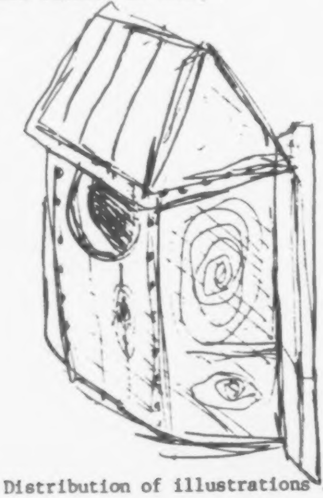
Description

Bird nesting box

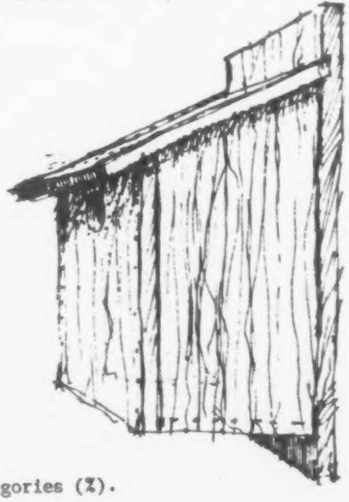
A wooden nesting box, viewed obliquely from the front so its front is to the left in the picture and one side is to the right. It is attached to a plank which protrudes above the roof and below the base (not visible). Nesting box height is about twice its width. Its roof slants forward and is wider than the box. At the front, just under the roof, there is an entry hole. It is surrounded by nails. The front is nailed to the sides. The nail heads can be seen as black dots. The roof is nailed on from the top. The graining is clearly visible.

No. of words: 25-280 (m = 205)

Example of poor agreement between the description and illustration (shown here reduced in size).



Example of good agreement between the description and illustration (shown here reduced in size).



Results. Distribution of illustrations in various categories (%).

Text	Pictures								
	Size			No. of picture elements			Agreement		
	1/4	1/4-1/2	1/2	Few	N.F.N.M.	Many	Poor	Fair	Good
Read aloud - heard	55	31	14	6	18	76	6	29	65
Printed text - read	41	35	24	12	29	59	6	47	47

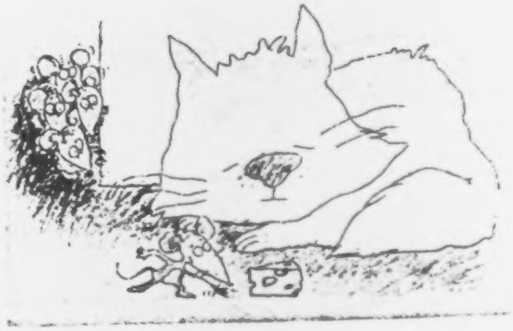


Fig. 3 Courage

Examples of redundant legends

A. Positive

The most courageous mouse of them all crept up to the sleeping cat to grab a piece of cheese.

"I do dare," whispered the brave little mouse and set off to take a piece of cheese from the cat.

B. Negative

Stealing cheese from the sleeping cat was an easy task for the thieving mouse.

The treacherous mouse sneaked up on the peacefully sleeping cat to steal a piece of cheese. Other greedy mice can be seen in the background.

C. Neutral

One of the mice cautiously approached the sleeping cat to take a piece of cheese.

A mouse cautiously approached a sleeping cat to get a piece of cheese.

Example of relevant text

The little mouse dared to be courageous since the piece of cheese is big enough.

Example of irrelevant text

Cheese is tasty and nutritious.

Example of contradictory text

Mice do not really prefer cheese. One study showed that they actually preferred meat products.

Can Multi-Image Presentations Be Affective and Effective in Education

by

H. CUSTER WHITESIDE

Educators have explored a variety of visual media in their searches to effectively communicate with their students. From the earliest attempts with paintings on walls of caves to present day utilizations of interactive laser discs, teachers have appropriated the technologies of their periods to transmit concepts and feelings. For approximately twenty-five years, educators have been investigating multi-image slide presentations as an instructional medium. The learning environments created by the use of multiple visual projections and accompanying sound tracks has been described as a "...total communication's experience greater than the sum of its parts." [1] This description unfortunately does not reveal what combination of the many variables involved should be used to produce the desired programs. The purpose of this paper is to review seven main component areas in four multi-imagery studies by Didcoct [2], Ehlinger [3], Tierney [4], and Toler [5]. The components include: purposes of the studies, main questions, hypotheses, research review support, independent and dependent variables, and reliability.

Didcoct

Purposes and Questions

Didcoct's purpose was to investigate if, "...the cost of equipment, productions, and display coordination was justifiable in terms of learning, or will a single-image presentation suffice?" [2,2] He asked three questions. First, was there a difference in immediate recall between students presented with a multi-image program and students presented with a single-image program? Second, was there a difference in affective reception between students presented with a multi-image program and students presented with a single-image program? Third, was there a difference in retained knowledge between students presented with a multi-image program and students with a single-image program? [2, 2-3]

He stated, a priori, there would be no difference in the scores of the 2 groups on a cognitive, affective and a cognitive retention test.

Didcoct traced the history of multi-image presentations for instructional purposes. He noted studies of cognitive and affective reception related to students viewing multi-image and single-image did not show a significant difference either in support or rejection of multi-image. The use of an identical sound track, mentioned in his hypotheses, was supported by several previous studies. Toler was critical of Didcoct for his over emphasis on the audio for test questions. [5]

Variables

Didcoct investigated two independent variables, single-image and multi-image.

Didcoct investigated four variables of reliability. First was instruments. Didcoct planned and produced two multi-image and single-image programs. They focused on the topics of Flanders Interaction Analysis System and on school personnel. Didcoct interviewed thirty elementary support personnel and selected seventeen for a slide-tape presentation. The written evaluations for the viewers were constructed by Didcoct and submitted to a panel of (4) instructors who had taught the course in which Didcoct planned to present. He failed to mention any type of pilot study or prototype testing of the programs. Second was materials. Detailed drawings and written descriptions were presented of the Multimedia Instructional Laboratory where the study was conducted.

In addition, Didcoct detailed the type, colors, number, and presented visual examples of the slides he used for the different programs. Unfortunately he did not submit these to any type of pre-presentation evaluation other than his own subjective judgements about their arrangement. [2,25] Third, was content validity. The test questions' content were verified by a group of judges who viewed the programs. Didcoct also noted that all the questions were based on the audio and visual portions of the programs. [2, 32] Fourth, was the Hoyt Reliability Co-efficient. The University of Wisconsin FORTAP program was used to check the reliability of Flanders and Personnel tests. They reported equal reliability coefficients for the two Flanders tests and for the Personnel tests.

Didcoct investigated three extraneous variables. First was potential projection problems. Didcoct's program on elementary school personnel had a variety of audio problems which were noted by students and may have influenced the poor reaction to the multi-image form of that program. The MIL's audio system is of a very high quality and it is unfortunate that this production problem was not corrected. Second was program visuals. Didcoct used cartoons drawn by the MIL's media staff to communicate a variety of program concepts. Failure to pilot test these potential miscommunications appears as a definite problem which should have been verified. Third was time of day. The classes were divided into four groups and on alternating schedules were requested to meet one hour earlier (7:45 a.m.) The subjects attitudes towards these earlier sessions was not sampled and leaves the potential for a negative influence on the treatments.

Population

The subjects were 124 students enrolled in Curriculum and Instruction 104, Introduction to Elementary Education at the University of Wisconsin, Madison campus. Of the 124 students, 120 were females, 4 were males. Ninety-four of the subjects were sophomores, twenty-six were juniors and four were seniors.

Sampling Method

The sampling method was an intact group where all members were required to take part in the experiment.

Assignment Procedures

Assignment of students to one of four small groups was done by an elementary education assignment committee. The students could also request a specific instructor. Didcoct makes the statement that most of the students were beginning their education courses and thus would not have prejudices about instructors. Yet he reports that 27 were either junior or senior level students in education.

Ehlinger

Purposes and Questions

The purposes of Ehlinger's study was to examine the number of images recognized by students when exposed to a multi-image presentation in which two image projection duration rates were utilized. Ehlinger asked three questions. First, would a multiple image presentation, with an image duration of three seconds, have a statistically significant greater mean raw score than those students who viewed the presentation with an image duration of one and a half seconds? Second, if a multiple image presentation was presented to a group of students, would those students, whose grade point average was at or above the median grade point average of the sample group, have a statistically significant greater mean raw score than those students whose grade point average was below the median grade point average of the sample group? Third, if a multiple image presentation was presented to a group of students, would those students, who were left-eyed, have a statistically significant greater mean raw score for images recognized on the left third of the viewing area than those students who were right-eyed? Fourth, if a multiple image presentation was presented to a group of students, would those students, who were right-eyed, have a statistically significant greater mean raw score for images recognized on the right third of the viewing area than those students who were left-eyed?

Hypotheses

Ehlinger stated five hypotheses. First, the difference between the number of images recognized in a multiple image presentation by subjects will be statistically significantly greater for the three second duration than the one and a half second duration. Second, the difference between the number of images recognized in a multiple image presentation by subjects will be statistically significantly greater for those subjects at or above the median grade point average of the sample group than those subjects below the median grade point average of the sample group. Third, the difference in the number of images recognized in a multiple image presentation between a one and a half second duration and a three second duration will be statistically significantly greater for those subjects at or above the median grade point average of the sample group than those subjects below the median grade point average of the sample group. Fourth, the difference in the number of images recognized in multiple image presentation on the left third of the viewing area will be statistically significantly greater for those subjects who are left-eyed than those subjects who are right-eyed. Fifth, the difference in the number of images recognized in a multiple image presentation on the right third of the viewing area will be statistically significantly greater for those subjects who are right-eyed than those subjects who are left-eyed.

He also investigated eight null hypotheses. First, there is no significant difference between the number of images recognized by subjects viewing a multiple image presentation for a three second duration and those subjects viewing a multiple image presentation for a one and a half second duration. Second, there is no significant difference between the number of images recognized in a multiple image presentation by subjects whose cumulative grade point average is at or above the median cumulative grade point average of the sample group and those subjects whose cumulative grade point average is below the median cumulative grade point average of the sample group. Third, there is no significant difference between the number of images recognized by subjects viewing a multiple image presentation for a three second duration whose cumulative grade point average is at or above the median cumulative grade point average of the sample group and those subjects viewing a multiple image presentation for a one and a half second duration whose cumulative grade point average is below the median cumulative grade point average of the sample group.

Fourth, there is no significant difference between the number of images recognized by subjects viewing a multiple image presentation for a three second duration whose cumulative grade point average is below the median cumulative grade point average of the sample and those subjects viewing a multiple image presentation for a one and a half second duration whose cumulative grade point average is at or above the median cumulative grade point average of the sample group. Fifth, there is no significant difference between the number of images in a multiple image presentation recognized on the left third of the viewing area by left-eyed subjects and the number of images recognized on the left third of the viewing area by right-eyed subjects. Sixth, there is no significant difference in the number of images in a multiple image presentation recognized on the right third of the viewing area by left-eyed subjects and the number of images recognized on the right third of the viewing area by right-eyed subjects. He also stated, a priori, there would be no significant difference in the number of images in a multiple image presentation recognized by subjects who have taken a course in speed reading and the number of images recognized by subjects who have not taken a course in speed reading. Finally, there would be no significant difference in the number of images in a multiple image presentation recognized by males and the number of images recognized by females.

Support

Ehlinger presented a systematic review of key topics related to his study. Starting with iconic storage from Neisser he moved to a brief history of multi-imagery and then discussed lateral dominance and grade point averages. He noted two studies by Haber and Neisser as basis for selecting his duration rates. Ehlinger also mentioned the physical limitations of the Kodak slide projectors in their ability to cycle no faster than a second. His literature review did not provide much support for his minor research variables of speed reading and sex.

Variables

He used Lateral Dominance tests which were based on the research of Belmont and Birch. They consisted of three different tasks in which the students were asked to identify letters by viewing them through a one half inch square hole in a 4 x 6" card. Using a camera to sight the letters, the subjects were to then repeat letters, and then align their index finger with a vertical line on a nearby wall. In each case, the observer noted which eye the student used and it was on that basis that the lateral dominance was determined. It would appear this was a simple and fast method of identification, but it also seems that some sort of pilot testing in which another method could have been used to double check these procedures might have insured their reliability. Ehlinger conducted a pilot study of his materials and procedures and made several minor revisions. This occurred only a few days before the actual testing and thus limited any major changes in the multi-image programs. Eight volunteers gave him a variety of suggestions, mainly dealing with procedures. Ehlinger failed to mention any reliability test he conducted and thus leaves the reviewer wondering about several aspects of the study.

Some of the extraneous problems involved projection difficulties. One of the problems identified in the pilot study involved the difficulty of identifying the twelve sections as separate units. Ehlinger, in an effort to remedy the problem, set up another. He used three overhead projectors with the sections outlined in green and projected these onto the multi-image screens during the study. Earlier in his research review, Ehlinger stated the subject should be required to search for the image within the viewing area. The additional cues presented by the overheads appears to go counter to this concept, as well as introducing an unrealistic aspect when compared to most multi-image presentations. The presence of these cues between slides could have influenced the students as they were recording their answers to the previous slides.

All of the students were volunteers. From three hundred and sixty students in sixteen education classes, he had one hundred and fifty-six volunteers. One potential problem may have been Ehlinger's request to use the students' grade point average as part of the study. The final group did have a range of 1.866 to 3.820, but the average was 2.9538. It is difficult to determine whether this group was representative of the larger population with this limited information.

Ehlinger's stated, "not all extraneous variables were controlled due to circumstances beyond the control of the investigator." [3, 66] This tends to leave reviewers wondering what may have occurred and influenced the study, but was not reported. Ehlinger's desire at the end of the dissertation to have his study serve as the basis for others is shortcircuited by such failures to detail the study and these extraneous variables.

Population

Participants were one hundred and fifty-six juniors and seniors enrolled in college of education courses at Northern Illinois University, Dekalb, Illinois. All the students were volunteers. Subjects included 50 males and 106 females. In regards to lateral dominance, there were 107 right-eyed and 49 left-eyed dominant subjects. There were 28 students who had speed reading courses.

Assignment Procedures

Each of the sixteen classes, intact, were assigned at random either the three second or one and a half second duration treatment. From these classes, Ehlinger formed groups of ten to see the multi-image presentations. If a student who was to be tested failed to be present, Ehlinger made an attempt to get a replacement from the classes at that time. He noted he did not use their scores in the final tabulations.

Tierney

Purpose

Tierney's stated purpose was to analyze the relationship between the multi-image format, cuing, for a specific kind of stimulus material. (illustrations from children's books in three common art styles) as they are observed by a particular group of subjects, normal five-and seven-year olds of average and low perceptual skill. [4,2]

She asked eight questions. First, the scores of children chosen to Set B, Test I and Set A, Test II are equal to those of children who saw Set A, Test I and Set B, Test II, when an analysis of variance is made. Second, the perception test scores of five-year olds will be lower than the perception scores of seven year olds, as measured by Raven, Set A, Set B, Stanford-Binet and the Total Test. Third, children classed as low perceivers or average perceivers are in fact low and average in perception when their scores on Raven are correlated with scores on Set A, Set B and Total Test. Fourth, the children taking the even items of Raven do not differ significantly from the children taking the odd items on Raven, when Raven scores are correlated with their performance on Stanford-Binet, Set A, Set B and Total Test scores. Fifth, the even item responses on Raven do not differ significantly from odd item responses when an analysis of variance is made. Sixth, testing location has no effect on scores of subjects on Raven, Stanford-Binet, Set A, Set B, and the Total Test. Seventh, the stimulus materials used in the research experiment measure the same aspect of perception (perception discrimination) as that measured by Raven. Eighth, life experience scores are related to perception scores on Raven and Standord-Binet.

Hypotheses

Tierney listed eleven hypotheses. First, upper left quadrant and contiguous cuing improve the perception of the whole picture, based on the increased number of observations of items of greater complexity rather than the observation of a greater number of items per se'. Second, art style affects the perception of the whole picture, based on the increased number of observations of items of greater difficulty rather than an increased number of items per se'. Third, the pictures in Set A do not differ from those in Set B with respect to the effects of placement and art style on the perception of the whole picture. Fourth, the perception of an item in a picture is facilitated by the use of an upper left quadrant or a contiguous type cue, based on an increased number of observations of cues by subjects in Test II. Fifth, realistic art style facilitates the perception of items cued more than abstract or cartoon art style, based on the number of observations of cues by subjects. Sixth, a picture having an Upper left quadrant cue facilitates perception of the item cued more than if it were presented with a contiguous type cue, based on the number of observations of the cue by subjects. Seventh, children of both age groups will not differ in their perception of cued items, based on the number of items observed by subjects. Eighth, children of both age groups will not differ in their perception of cued items, regardless of different art styles, based on the number of items observed by subjects. Ninth, children with low and average perception scores will not differ in their perception of cued items, regardless of art style, based on the number of items observed. Tenth, children with low and average perception scores will not differ in their perception of cued items, regardless of cue position, based on the number of items observed. Eleventh, life experience will influence perception of cued items less, when cuing is used, based on the number of observations of the cued items viewed by subjects.

Support

Tierney's literature review presents a detailed history of multiple image research up to the time of her 1971-2 work. She challenged several of the assumptions regarding multi-image presentations and used aspects of her experiment to test her viewpoints. In addition to a general review, she focused attention on the topic of perception, a key component of her study, and quoted from a variety of outstanding psychologists who have developed expertise on perception in children. Eye movement was also covered and Indiana University studies by Niekamp and Fleming were noted. Cuing was also covered as well as redundancy. She also provided a detailed description and pilot study information on her "Real World" testing of multiple image programs with children.

Variables

Tierney used two tests, Raven and Stanford-Binet, which had been tested over a long period of time with many populations. Her own picture sets were given several pre-treatment evaluations. One, created by Davis, which allowed the experimenter to weigh the subjects initial responses in order to give higher scores to the children who perceived the items most difficult to perceive. Tierney stated, "this procedure also had as a consequence increasing the variance between scores, which also permits increasing the reliability of the items." [4,92]

Tierney used several types of screens for her study in the different testing locations. In the apartments and nursery, she used a portable four foot square screen; and in the library, she used a white wall. Tierney provided a color 8x10" print of the visuals used in the study as well as several black and white drawings. These should be helpful to researchers interested in duplicating the study.

Tierney's study contained five potential sources of extraneous variables. First, perception tests and the experimental questionnaire were administered by several individuals other than Tierney. They reported problems with fatigue and impatience with the children. Second, the five-year olds' shyness often limited responses which was also confused by the failure to correctly operate the cassette tape recorders. Tierney noted, "use of the hand mike to turn the cassette tape recorder on and off led to two difficulties: (1) being hidden, it was easy to forget to turn it on, and the child would have to repeat his responses; and (2) occasionally a child would not be identified by name on the tape before proceeding with the post-test. This necessitated backtracking through the test papers and questionnaires to record the names and ages on the tape." [4,89] Third, Tierney reported that she used prodding with children who failed to respond to her questions on the posttest. Fourth, the physical settings varied from the local public library to a nursery and then individual apartments. Each of these settings presented different environments and may have had some influence on the treatments. Fifth, different times of day, after lunch versus early morning, may have influenced the children's perception and responses.

Population

Her subjects were 39 five and seven-year old children. All the children were volunteers. The children were from the Bloomington, Indiana area.

Assignment Procedures

Following an initial screening for perceptual skills (Raven Progressive Matrices), subjects were divided into low and average perceptual groups and then randomly assigned to two sub-groups for treatments.

Toler

Purpose

The purpose of Toler's study was to contribute to the body of empirical data regarding multi-image as an instructional device. This was done by conducting interactive research in order to determine whether the use of multi-image presentation resulted in improved performance on a visual discrimination task at two different levels of complexity by seventh and eighth grade students of different perceptual types. [5,10,11]

Her study sought to investigate the relationship between perceptual type (visual-haptic) and presentation mode (simultaneous-sequential) on a visual discrimination task at two different levels of complexity? [5,39]

Hypotheses

Toler stated six hypotheses. First, students of the visual perceptual type will score higher than those of the haptic perceptual type on visual discrimination tasks. Second, simultaneous presentation will result in higher scores on visual discrimination tasks than will sequential presentation. Third, students will score higher on a visual discrimination task at low levels of complexity than at high levels of complexity. Fourth, there is an ordinal interaction of perceptual type and presentation mode on scores of a visual discrimination task. The simultaneous presentation mode will result in higher scores than the sequential mode for both perceptual types, but particularly for the haptic. Fifth, there is an ordinal interaction between presentation mode and level of visual complexity. The simultaneous presentation mode will result in higher scores than the sequential presentation mode at both levels of complexity, but particularly at the high level of complexity. Sixth, there is an ordinal interaction between perceptual type and level of visual complexity. Visual will score higher than haptics at both levels of complexity, but particularly at the high level of complexity.

Support

Toler presented a brief history of multi-imagery and specific components of visual learning which were essential in multi-image instructional presentations. She noted the work of several outstanding psychologists whose emphasis had been visual concept formation. Toler also described the studies of Lowenfeld on perceptual types in learning-visual and haptic. Visual learners tend to use their eyes as main intermediaries for their sense impressions. Haptics learners do not use their eyes, but rather rely on other senses. She noted Ausburn's (1975) study and used it as a model for changing the visual tasks required.

Toler used Lowenfeld's tests to determine perceptual type: The Successive Perception Test I, Visual Haptic Word Association Test, and Test of Subjective Impressions, Form I. Toler reported that previous researchers had found the tests lacked sufficient guidelines for scoring and had to rely on a group of judges to determine and interpret results.

Toler also used a panel of four judges for her experiments. They reported major problems with the Visual-Haptic Word Association Test, and it was determined to eliminate it from the screening procedure. Criteria for placement in the visual group was 60% or more on the Successive Perception Test I, and 3 of the 4 judges to determine she/he had made a visual response to the Test of Subjective Impressions, Form I. Those students who scored 60% or more incorrect and were judged to make a haptic response were placed in the haptic group. (More information on Ausburn's experiment and how he handled the difficult tests should be reviewed before using Lowenfeld's tests.)

Toler conducted a pre-pilot study experiment at Indiana University with 23 graduate students, and made several minor revisions in the area of exposure time on the screen-from 15 to 9 seconds for an entire three image presentation. The drawings which served as the basis for the slides are included as part of the section on stimulus materials in her dissertation. The pilot study was conducted at a middle school in Franksville, Wisconsin with fifteen seventh and eighth graders who had volunteered for the study. Toler used the results from this pilot study to identify specific examples for the Low Level of Complexity and High Level of Complexity. The results of her main experiment appear to support these selections as well as the revised exposure times from the I.U. study.

From the information presented, the reliability of the screening tests seem to vary from good to useless. The reliability of Toler's slide presentations and visual discrimination tasks appears good, but additional research is essential before any generalizations beyond the specific population should be made.

*(Toler checked this test with a test-retest, one week after the initial testing and yielded .72 for reliability. [5,54]

Variables

Toler's study contained four areas of potential extraneous variables. First, in place of a large screen, a blackboard in the front of a classroom was covered with white paper. This would appear to be an exceptional arrangement and rather unrealistic for most multi-image presentations. Second, the California school used for the study had a year round program, but the question of whether the summer session student body is typical may influence any generalizations. Third, all of the 170 students screened were volunteers. Only a short time before the opportunity to volunteer for Toler's study, the other 75% of the students had been given a State Department of Education (CA) study. This may present a potential situation in which these volunteers had felt left out of the first study Another potential "halo" appears with their final group of 38 (19 visual, 19 haptic), who were so eager that Toler reports all the students requesting to know if they had done well enough in the initial screening to be included in the study. Fourth, the different periods of treatment times were not reported. The potential influence of different times of the school day may effect students' reaction time and other responses which in turn effect test results and should be reported when appropriate. Fifth several students in each group were absent for their test periods and failed to make additional sessions. Toler noted the problem and data was randomly discarded from several subjects to provide equal numbers of subjects per cell. (N 17).

Population

Participants were 170 seventh and eighth grade students from Del Dios Middle School, Escondido, California. All students were volunteers. Toler did not include any socio-economic details of her subjects. Screening reduced the number to 76, and then absentees to 68.

Assignment Procedure

Following the initial screening for perceptual type identification (38 haptics and 41 visuals), three of the visuals were excluded at random to provide equal numbers of each perceptual types. Random assignment was used to divide the groups for presentation mode treatments.

SUMMARY

The focus of this paper was a selective review of seven main component areas related to multi-image studies by Didcoct, Ehlinger, Tierney, and Toler. As a result of this review, the following general trends appear to be shared by all dissertation studies.

a. There appeared to be a solid base of research support for multi-image experiments. All the studies had adequate research support for their experiments.

b. A minimum of two independent variables should be considered for a major study in multi-image presentation experiments. All the studies had at least two independent variables.

c. A variety of populations should be considered for multi-image research. The studies ranged from five-year olds to college students.

d. Analysis of variance or analysis of covariance appear to be appropriate inferential statistics for the types of experiments conducted in the selected multi-image studies. All the studies used either ANOVA or ANACOVA.

e. There appeared to be general failure to conduct posteriori comparison testing. Only Toler used any posteriori tests and her's was limited to only one of her five significant difference findings.

f. There appeared to be a failure to check reliability in at least one major area of all of the studies.

Conclusions

The four studies reviewed present a variety of multi-image topics and populations. They have individual strengths and weaknesses and should be considered as separate studies. The common focus on multi-image presentations in educational settings emphasizes how one medium can potentially serve a wide range of learning needs. The fact that the majority of the studies reported no significant difference may or may not reveal the true potential of multi-image presentations. All of the studies had several minor problems in reliability and extraneous variables, which may have influenced the final results. It would appear that additional studies of multi-image presentations should be conducted, but with attention to each aspect of the experiment.

For additional information on multi-image research, the Association of Multi-Image in Tampa, Florida provides several publications by Dr. Ken Burke. Suggestions for design of experiments are provided in Donald Campbell and Julian Stanley's Experimental and Quasi-Experimental design book. Another source is Fred Kerlinger's Foundations of Behavioral Research. For statistical suggestions, Chase's Elementary Statistical Procedures and Kirk's Experimental Design: Procedures for Behavioral Sciences are highly recommended.

Considerations for Graphic Design of Projected Media

by

CAROL MASSOTH

Visuals can help make your spoken message more clear. Projected visuals reinforce the spoken work and promote learning through the learner's visual sense. They can:

1. Attract Attention
2. Convey a Message
3. Elicit a Reaction
4. Foster Retention

Also, by planning the use of visuals in your presentation, you are forced to organize your thoughts prior to presenting them. This planning process can make your message clearer.

A large vocabulary of graphic symbols has evolved to make ideas clear. Their vocabulary originated with cave paintings and grew to include Egyptian hieroglyphics, signs of the Zodiac, heraldry, the printed word and thousands of others.

Contemporary communications continue to use graphic symbols. Hundreds of graphic messages stimulate us every day. They reach us through posters, book jackets, magazine advertisements, packaging designs, billboards, television programming, the movies, etc.

GRAPHIC SYMBOLISM

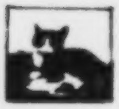
There are three basic ways to represent an object. (Wileman, 1980) They are:

1. **Pictorial Symbols**
2. **Graphic Symbols**
3. **Verbal Symbols**

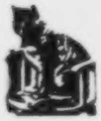
Pictorial Symbols

Pictorial Symbols include the **3-d Model**, the **Photograph** and the **Illustration Drawing**.

The **3-d Model** is a three dimensional representation of an actual object. Three-dimensional models of objects could include a skeleton hanging in a biology lab or a world globe in an elementary school classroom. One problem with a 3-d Model is that it may not be large enough for all of your audience to see the appropriate details.



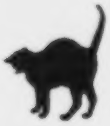
We could use a **Photograph** to explain an idea. Photographs are two dimensional representations of three dimensional objects. Photographs can show details clearly. We are used to seeing lots of photographs in family photo albums, in books and in magazines. When photographs are projected as slides they have the advantage of being big, with details that can be seen by many learners.



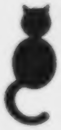
An **Illustration Drawing** attempts to be realistic in its detailing. It reflects the natural appearance of an object, including detail, texture, color, etc. Illustrations can often be seen in children's books and in magazines.

Graphic Symbols

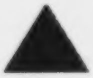
Graphic Symbols attempt to simplify the object or idea they represent. Graphic Symbols may be **Image Related, Concept Related** or **Arbitrary.**



Studies show that objects are most easily recognized by their shapes. **Image Related** graphics are based on the natural shape of the object represented, using correct proportions and some simplification, but retaining some of the natural detail of the object.



Concept Related graphics are simple and stylized. If learners are already familiar with the idea, they can make the mental transition to a stylized symbol.



An **Arbitrary Graphic** may or may not be related to any shape associated with a real object. Learners must be familiar with the idea and must be led to link an Arbitrary Graphic with that idea before they see it and link it automatically with a particular idea.

Verbal Symbols

Verbal Symbols are familiar links to visual objects and ideas because they become a standard method of learning in schools. They include the **Definition Description** and the **Noun Label.**

"...a carnivorous mammal long domesticated and kept by man as a pet or for catching rats and mice."

A **Definition Description** may or may not include any physical description of an object. Research shows that the best definition descriptions are those that evoke a clear mental picture or image of a concept. Also note that a definition is a mere linking together of a particular string of letters and words. Learners must supply a meaning to this definition based on their ability to read and link the verbal message with the visual image. It is interesting that many projected images used by teachers are word visuals--definition descriptions--which depend greatly on the learner's abilities to make proper mental linkages.

Cat

the **Noun Label** is the most abstract visual cue. Like the Arbitrary Graphic, it is greatly simplified and depends on the learners being thoroughly familiar with the idea presented and able to link with it when cued by this visual symbol.

You may choose among Pictorial, Graphic and Verbal object representations when planning visuals for projection. Your choices become your visual message and can help you to attract attention, convey a message, elicit a reaction and foster retention.

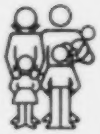
The visual representation concept is complicated. Not every visual choice is clean cut. You may find it helpful to practice recognizing object representations. Try looking through magazines and classifying the visuals included as **Pictorial Symbols, Graphic Symbols** and **Verbal Symbols.**

NINE CONSIDERATIONS FOR DESIGNING GRAPHICS

Once you understand the ways available to represent objects you are ready to plan your own visual messages. Your plans should involve the following considerations.

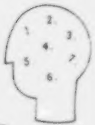
1. Analyze Your Audience

Remember that each person brings what he or she already knows to the new concept you introduce. Take the time to jot down both what they already know and what they need to learn before you begin planning your visuals. If your audience is young or uninformed, you may need the aid of realism to get your message across in accurate detail. If your audience is already familiar with the idea, a simple **Graphic Symbol** or **Arbitrary Symbol** may get across your message.

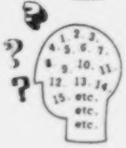


Here is a symbol for the idea of "family". If you choose to use such a symbol, remember that many families these days have fewer than 3 children and often have only one parent. Will everyone in your audience relate this symbol with the idea of "family"?

2. Simplify the Message



Dr. Barek Victor Rosenshine of the University of Illinois explains that "there are limits to the amount of information learners can attend to and process effectively." (1985) He explains that we can store only 7 new bits of information at one time in our working memories.


?
?
?
1. 2. 3.
4. 5. 6. 7.
8 9. 10. 11.
12. 13. 14.
15. etc.
etc.
etc.

When too much new information is introduced at once, we become over saturated, and may become confused. We ignore or do not process additional information.

Therefore, information must be fed to us in digestible portions, with time allowed for us to process new information through short term memory before being fed more new information.

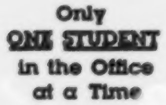
Graphics can be simplified by outlining basic shapes, eliminating unneeded detail, or by progressively disclosing additional details to build a more complex idea.

3. Amplify

Amplifying visual detail can help you communicate more clearly. You can amplify by enlarging important detail, by exaggerating detail (as through cartooning) and by giving multiple examples of the point you are making.

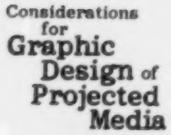
4. Consider Visual Design

Here is your opportunity to discover the artist within yourself. Visual design simply concerns the **Visual Balance** of the visual you plan.



Only
ONE STUDENT
in the Office
at a Time

The easiest way to achieve balance in a visual is by using symmetry, or likeness of halves. The right half of a visual may be close to a mirror image of the left half. This visual design is, by nature, very static and conveys a sense of stability.



Considerations
for
Graphic
Design of
Projected
Media

Asymmetrical balance is another choice. Right and left halves are still balanced, but not in an equal way. Asymmetrical balance is more dynamic, informal and conveys a sense of movement.

There is no right or wrong visual design, only intentions and options. A feeling for visual design comes with practice, and balance should be considered for each visual planned.

5. Consider Readability Standards

Visual planners used to be concerned with legibility standards, or whether the message was "discernable". However, **Readability**, meaning "understandable", should be our ultimate goal.

Consider these two ideas: MAKE IT BIG and KEEP IT SIMPLE. Together, they would greatly improve most visuals planned.

Bigger is usually better. What really matters is the size of the projected visual on the screen. Remember that a television screen needs even BIGGER visuals planned than do slides and overhead transparencies.

How long should you keep a visual on the screen? Some sources say not more than 10 seconds. A better answer might be: As long as necessary to do its job. A visual that explains a complex relationship will require a lengthy explanation and a long viewing on the screen. A simple concept will take less projection time.

S
Sans-serif

S
Serif

Concerning choice of type, some experts say that sans-serif type is best for projection. The little feet can plug up in reproduction if they are fine in detail. While sans-serif type is always a good choice, some bold serif type can work well too. There are many typefaces to choose from. Give thought to the readability of the type you choose. Before making a final decision, project a sample of the type you have chosen at the size it will be used.

When planning type, consider using it in upper and lower case type. CAPITAL LETTERS ARE GENERALLY THE SAME SIZE, SO THERE IS LESS DIFFERENTIATION OF SHAPE WITHIN A WORD. Ascending and descending letters in lower case give greater differentiation of shape within the word. "Words are perceived by their specific word-shape outlines. Once a word has been read a few times (especially short to medium length words) its outline shape becomes stored in memory. Future recognition, or recall, of the word takes place with letter-by-letter deciphering." (Haley, 1986) Remember that the use of upper and lower case lettering will make your visual easier to read than if you plan them in all capitals.

Readability has more to do with quantity of detail than with any other factor. Projected text visuals that have about the same amount of copy will project approximately the same regardless of whether they have been typeset, typewritten or neatly handwritten. You can NOT take an entire page of typewriting and translate it at original size into an understandable visual. There will be too much information to be discerned, and the words will be too small to read.

While planning visuals, you must constantly ask: Can I make this BIGGER? Can I SIMPLIFY this? There are 4 ways to accomplish these tasks.

A. USE KEY WORDS in text visuals rather than whole sentences. Key words will reinforce the main point of your presentation.
B. DIVIDE CONTENT INTO SEVERAL VISUALS. This will allow you to enlarge each visual detail to a readable size.
C. PROGRESSIVELY DISCLOSE, building an idea while controlling the pace at which new information is added.
D. PROVIDE A HANDOUT, especially if you have concerns about your detail being legible. The audience can read from the handout if they can't read the projected visual on the screen.

6. Consider the Use of Color

Color provides strong visual appeal and adds variety and interest. It can draw attention to a specific location on the visual. It can distinguish between parts of a visual. It can add visual interest as decoration. You can tie into emotional responses in your audience by using color--red for danger, yellow for caution, etc.

Consider contrast between the colors you pick. Squint at the projected visual. Can you still discern detailing from the colored background? The stronger the contrast between colors, the more legible the details become.

7. Plan for Active Audience Involvement

Dr. Roseshine suggests that "group active participation is particularly useful when teaching students to identify parts of things, or to discriminate among similar things." Plan for some personal interaction with your audience, particularly when covering complex materials. Their responses will help you determine whether your message has been made clear. Interaction provides a review of material for reinforcement and may give students additional insights into the topic being discussed.

8. Consider Consistency vs. Variety

Visual consistency does not attract attention to itself. Therefore consistency between visuals in a series might be appropriate when introducing complex information. Your audience can concentrate on the specifics of the visual rather than being distracted by how a new visual differs from the previous visual projected. Variety can be introduced, however, when you need a change of pace or desire a visual punctuation in your presentation. Remember, you can't do anything DIFFERENT until you've done something the SAME. Too much variety becomes a routine in itself.

9. Reinforce

Reinforcement helps your audience retain information in their long term memories. Psychologists think that "depth of processing" is related to retention. Information processed at deeper semantic levels decays more slowly in memory than information that is noted superficially. "Sharp recall comes from storing information in a 'rich, elaborate form'--that is, related to something already known—lots of somethings--so there are many pathways leading to the fact. Understanding the subject and relating it to something you know makes for powerful memory storage" (Begley, Springen, Katz Hager, Jones, 1986). Reinforce with a variety of examples.

Also reinforce through repetition. Rosenshine suggests **Spaced Periodic Review** to help with reinforcement and retention. Material might be reviewed again the same day, a week later and then a month later. Then there might be a final exam. Such review helps impress the material into long term memory.

CONCLUSION

The best review of these considerations is in your practical application of their use. Try them soon. Test the results. Modify your plan if necessary. Plan more visuals. Make the use of visuals an integral part of your presentations. Communicate visually as well as verbally.

References

Begley, S., Springen, K., Katz, S., Hager, M. & Jones E. Memory. *Newsweek*, September 29, 1986, pp. 48-54.

Haley, Allan. Legibility and Readability (Part 2). *Upper and Lower Case*, November 1986, *13*, pp. 56-59.

Rosenshine, Barek Victor. Effective Classroom Teaching in Well Structure Areas. Contributed to *Instructional Quality Program, North Central Regional Educational Laboratory*, 1985.

Wileman, Ralph E. *Exercises in Visual Thinking*. New York: Visual Communication Books, 1980.

Programmed Visualization—Bidden Mental Imagery for Instructional Design and Scripting

by

DAVID G. GUEULETTE

When people's eyes are closed and there is silence, images and thoughts come to them that appear to be within their mind. In their mind's eye people "see" memories of past events, imagine future situations, daydream of what may be or might have been, dream of vividly textured happenings beyond the bound of space and time.

When people's eyes are open, they are drawn to scenes that they perceive outside their bodies. They see the contents of the room they're in, and other people - scenes which change as they shift their eyes. Most people take for granted the fact the objects they perceive are real and separate from them.

Similarly, most people feel that they know a great deal about the outer world, the world beyond their body, and very little about the inner one. In fact, some people are so involved with external reality that the are only fleetingly, if ever, aware of inner events. In modern society, stimulation from the outer world has become so intense that people are daily, hourly, bombarded with a flood of visual and auditory stimuli - bombarded so continuously that they have to make a conscious effort to shut out the outer world, in order to become aware of inner experiences (Samuels & Samuels, 1975, p. 5).

Visualization - the Need

A major problem facing those of us who are involved in the development of instructional visual materials or those of us who teach visual design, instructional design or video scripting is the translation of mostly verbal information into graphic constructs.

Instructional designers involved in the translation of objectives into a visual medium face a constant demand to provide a script or image that elicits or supports the visual component of the program. Many instructional designers or script writers lack sufficient experience in art or graphic design to bring appropriate pictorialization to the content.

Designers often habituate standard visual treatments lacking the creativity or energy to develop new or more effective images or visual sequences. Inertia impedes the creation of new image ideas. The end result is formula portrayals of changing concepts or objectives. The easy solution to an image requirement is to create a chart or diagram and to explain it step by step.

This vapid use of visual treatments is not corrected by staff artists or video producers who are usually quite able to lay out standardized images quickly, effectively and at low cost. In many instructional design environments artists and video producers lack training or interest in the subject or content or in instructional processes and thus are not ordinarily ready to supply the most productive images.

Increasing numbers of instructional designers, developers and writers are charged with the challenge of creating useful and engaging visuals. Textual material with pictorial support is widely used in training and there is evidence that this traditional method of mediating instruction is on the upswing. Certainly, television and all video production for instruction is showing a marked increase. In fact instructional video may be emerging as the primary means of delivery of training in many corporate environments. While computers are lauded as the miracle medium of the Eighties, it is more likely that video has assumed its long awaited role as major delivery system of instruction. Although it is obvious that more and more training is being communicated or will be communicated by microcomputers; which will depend on numerous and effective visuals that carry or enrich the verbal or numeric data of the software. If you examine the reports on the value of teaching software a common concern will become evident. The visuals that sustain or supplement the instruction are often terrible. These visuals sometimes distract from or even contradict the textual display. Improved appropriate and productive visuals will be in constant demand as the software for training proliferates.

Another recommendation to use visualization comes from a teacher of television scripting and production. Steven Seidman has built a strong case for using mental imagery as a generative device to come up with appropriate visuals before a writer attempts to write a script. He notes, "Ordinarily, such designers start by writing a script; they then visualize the images. But in some cases, it might be a better idea to begin with the visual ideas and then move on to the narration and dialogue" (Seidman, 1985, p. 27). Seidman suggests the extensive viewing of music videos is a good way to start the visualization process. Watching the videos spurs the visual imagination and stimulates the visualization process - an excellent prelude to visualization for later script development regardless of the topic. He recommends the writing of a treatment only after considerable visualization and image creation. The next step is the development of a storyboard. He asks "What does this mean for you? This means that you don't become a scriptwriter by simply using a script format. You must think visually. You must find ways to impart your information and the message you create from it through what will be seen" (Seidman, 1985, p. 27).

This notion of the visual before the verbal is a commonly heard theme from producer/directors of video. Odin Westgaard of Advanced Systems pleads that those involved in the development of television scripts, first imagine the visual contexts and topics before committing any idea to paper. He claims that there is a powerful bias to start with words first which imperils the development of the best visuals. Television productions that derive from wordy scripts turn out to be wordy video. The requirements for more and better visuals, comes from various but related sources. In a world of increasing reliance on the visual, strategies that nurture the creation of superior visuals will be most valuable.

Tactics for the improved generation of mental images should not be confused with the procedures for understanding visuals. Much has been written on intellectual and emotional responses to pictures or visuals - sometimes called "visual literacy". This report is concerned with the selection and manufacture of correct visuals but pertains more to the generating of the raw materials or mental visions from which the images come.

However, as Samuels & Samuels have observed, we are often so caught up in the heavily mediated everyday world and so emersed in our viewed reality that we have great difficulty isolating our inner visions that could assist us in bringing forth dynamic visual representations to support textual, numerical or narrated instruction.

This seems to be a rather interesting conflict of conditions. Much of the literature in academic research associated with media studies suggests that contact with visuals increases our ability to generate visuals. In other words we develop a large visual vocabulary that tends to expand as does our experiences with pictures, graphic representations, and images around us.

However, the constant flood of visual stimuli may have the effect of preventing us from isolating and examining what has been called by some the "movies of the mind." The examination and utilization of these images that come bidden or unbidden to our consciousness is frequently termed: visualization. The key to the robust generation of visuals is the successful exercise of visualization techniques.

What follows is an interesting and probably typical situation that demonstrates the environment that calls for the development of substantial visuals but in fact impedes their realization.

As as example of the typical conflict between writer, producer and artist in the production of television materials. Nancy Lovendosk of Advanced Systems Incorporated (ASI), Elk Grove Village, Illinois, described the following exchange.

> Over the past three years I've worked as a Course Developer at Advanced Systems, Inc., producers of multi-media data processing training courses. ASI employs individuals in a variety of professions. We have course developer/writers, graphic artists, data processing technical experts, producer/directors, and editors.
>
> I've spent a lot of time in meetings with all of these people during the course of three years. The scenario of one type of meeting--the video planning meeting--goes something like this.
>
> Take one course developer/writer (who is sometimes also the subject matter expert), one producer/director, and one graphic artist and lock them in a small, closed room with no windows for about three days (the time varies). In a short period of time, certain patterns emerge. The course developer/writer is seen earnestly trying to explain what he/she wants to have happen on the screen. The explanation is often fraught with data processing jargon. ("Well, ya see, if no JOBCAT or STEPCAT DD statement for the catalog is specified, the catalog will be dynamically allocated.") The graphic artist's response to this is an absent-minded vague nod while he/she doodles outer space creatures in the margins of the storyboard in between stifled yawns. The producer/director, meanwhile, is making a valiant effort to understand what the course developer/writer is trying to say ("Now what exactly are JOBCAT and STEPCAT DD statements?") so that he can act as interpreter to the graphic artist. Grim picture, right? (Gueulette, 1982, p. 21)

This case typifies that condition in which an energetic exercise in visualization would probably bring about more and improved visuals. While there is a connection between "brainstorming" and visualization, the focus on the evocation of mental images that have a certain role to play in the creation of the final visual separates the two activities.

The professionals who might often benefit the most from visualization activities are often the ones neglected in the traditional training program. It is just assumed that well-educated, intelligent trainers do not require specialized training themselves. However the opposite may well be true. Spend some time and money training the trainer and improve overall instruction. There is evidence to recommend visualization training to improve materials development performance. Persons working on ideas that need to have visual representations are exactly the one who should be engaged in intensive visualization and design training programs.

Visualization as Creativity

Creativity and imagination are often directly related to the process of visualization. Samuels & Samuels have noted:

> The word imagination contains within it the word image, image meaning a mental picture. Most current theories of creative imagination hold that images exist and are stored in the unconscious mind, and that the conscious mind can become aware of them. It is believed that within the unconscious images can become associated to form streams of images, that they can juxtapose to form combination images, or coalesce and recombine to form entirely new images.
>
> New images come to awareness as novel ideas, illuminations or flashes in ordinary consciousness (Samuels & Samuels, 1975, p. 240).

We should not be afraid to use subjective or affective teaching experience or tests. Don't we all use subjective teaching and testing to some extent? Of course, some will deny the worth of processes that can not be well objectified or measured; but, increasingly educators and trainers do seem to be finding use for other than purely objective instruction. If a trainer cannot consider the use of the subjective, visualization activities will not be easily acceptable. However, visualization techniques like artistic design lack objectivity in many cases but unquestionably provide important materials.

Discussions of creativity in general also incur dissension from those who will not or can not accept non-objectifiable human behavior. If we can't take a leap of faith to begin to explore the use of these so-called "psychotechnologies" we may also be closing the door to a wider and more exciting world of learning.

The criticism of some subjective techniques is deserved. The argument that creativity is often connected with eccentric behavior like smelling oranges, or drinking excessive amounts of coffee or taking drugs dampened the enthusiasm for championing the approaches. No one would want to argue for bizarre behavior especially in the work place.

If there is a weakness to the visualization thesis it is its proximity to outlandish behaviors or spiritual beliefs. It is vitally important to distill out the significant aspects of visualizations for utilization in settings that require many and effective visuals.

Aside from generating numerous and efficient images, visualization also plays another prominent role in the development of visions and ideas. It provides for the opportunity to be diverted from the ordinary visuals used for instruction in a certain setting. The act of diverting attention from usual images promotes less reliance on habitually used visuals and affords the designer the opportunity to explore a new set of images.

Samuels & Samuels, pioneers in the development of rationale for and organization of visualization techniques, have provided very detailed descriptions of the receptive visualization attitude.

> Receptive visualization likewise provides access to unconscious images. It gives people a more controlled means of getting in touch with the spontaneous new images that form the basis of their creativity.
>
> Doing a receptive visualization, like experiencing other reverie states, allows new images to surface free of censorship from the ego. Ego censorship often inhibits the formation of new images and/or tends to make potential images combine in known, stereotyped ways.
>
> Because creative images come from the unconscious part of the mind, which is not under the control of the ego, many people feel that such images come automatically - from outside themselves. For this reason some artists have felt that they must surrender to the creative impulse or even become possessed by it (Samuels & Samuels, 1975, p. 240).

Visualization - The Practice

Programmed Visualization is the process that the authors have outlined to maximize the creative potential of the receptive visualization attitude:

> Here is a programmed visualization for creativity: Close your eyes. Breathe in and out slowly and deeply. Allow yourself to relax. Go to a level where you can visualize, where images flow freely and easily. Allow an image to come to mind that you are working on or that you saw in a receptive visualization. Move your eyes over the image and allow it to become more and more vivid and clear. As you scan the image, you may see it change before you or you may get an idea for changing it. Now look at the changed image. If the image feels "right," retain the new form. If the image does not feel "right," allow it to return to its previous form (Samuels & Samuels, 1975, p. 259).

This approach to visualization is useful and acceptable to those of us who scorn the parapsychological, mystical, spiritual, paranormal or out-of-body techniques of imaging. There is little of the metaphysical in the Samuels & Samuels regimen. The behaviors in programmed visualization are not ethereal or fantastic. They rely on common, well-understood and accepted experience we all have. The program simply accentuates and works imaging activities for specific results. Visualization associated with clairvoyance, icons, Karma, healing, Jungian analysis and kindred fringe experiences hinders appreciation of the merit of the strategy. Visualization has taken some strong criticism for and suffers from abuse by associations with highly subjective or spiritual beliefs and practices. However we should be willing to observe and approve the process as it has usefulness in the development of visual materials.

Receptive visualization states followed by programmed visualizations are conducive to the production of strong visuals.

> . . . the conditions under which people receive spontaneous visualizations, can be consciously created, reproduced, and controlled. The door to the creative state is receptive visualization. Receptive visualization occurs at a level of non-ordinary consciousness which produces inner imagery. The receptive visualization state has all the characteristics associated with the stages of incubation and creative illumination:
>
> - access to images from the unconscious
> - lack of ego censorship
> - freedom from labeled ideas
> - identification with the object-image
> - autonomy of imagery
> - symbolization
>
> Programmed visualization gives creative people a chance to work with and perfect their creative ideas. It can be the counterpart to and/or a continuation of the receptive visualization state. During programmed visualization creative people can work with their images, manipulate them, and evaluate changes without having to resort to material form. In programmed visualization, people can be guided by their feelings in selecting which changes are "right" and which should not be used. Using programmed visualization to play with images and evaluate them can make it possible for artists and creative people to achieve a final image even though they did not initially visualize the image as a whole. People can even develop an image entirely, based on no initial visualization, by building it up piece by piece, keeping "lines" that feel good and erasing those that do not. In this way, people can bring to awareness images that exist in their unconscious that they have previously been unable to visualize (Samuels & Samuels, 1975, p. 259).

Finding the right or correct image requires some specific attention. The images according to Samuels & Samuels and others have some common attributes:

1) a feeling of correctness
2) a feeling of surprise
3) a sense of the answer appearing whole
4) a sense that the answer is a shorthand form for the idea
5) a sense that the answer is in symbolic form
6) a feeling of release or joy as the images relates to an important problem (Samuels & Samuels, 1975, p. 259)

Even though the test of the value of the image is highly subjective it is useful as a guide to determine if you are on track with the process.

Samuels & Samuels (1975) developed a series of visualization techniques which focus on building a hierarchy of imagery skills. These techniques are designed to teach visualization, to improve the learner's natural ability to visualize, and to provide the learner with the means to use visual imagery to accomplish specific goals. The steps provide a door to the process of programmed visualization. The succession is as follows:

1. VISUALIZING A SMALL, UNCOMPLICATED, TWO-DIMENSIONAL, BLACK AND WHITE OBJECT, RECENTLY PERCEIVED (RECENT MEMORY IMAGE)
2. VISUALIZING A SIMPLE, FAMILIAR, THREE-DIMENSIONAL, COLORED AND TEXTURED OBJECT, RECENTLY PERCEIVED (RECENT MEMORY IMAGE)
3. VISUALIZING A PLACE OR OBJECT FROM THE PAST AND MENTALLY MOVE ABOUT THE VISUALIZED SPACE (DISTANT MEMORY IMAGE)
4. VISUALIZING A DISTANT MEMORY IMAGE OF AN OBJECT, NOTING DETAILS AND VIEWING THE OBJECT ON ALL ITS SIDES
5. VISUALIZING A RECENTLY PERCEIVED OBJECT AND MENTALLY ROTATING THE IMAGE AT A CONTROLLED PACE AND NOTING THE GRADUAL CHANGE IN PERSPECTIVE (IMAGINATION IMAGE INTRODUCED)
6. VISUALIZING AN OBJECT IMAGE, MENTALLY MOVING ONESELF AND THE OBJECT IMAGE AT A CONTROLLED PACE, AND CHANGING THE OBJECT'S APPEARANCE SUCH AS SIZE, SHAPE, AND COLOR (MEMORY IMAGE MIXED WITH IMAGINATION IMAGE)
7. VISUALIZING A FAMILIAR PERSON NOTING DETAILS OF APPEARANCE
8. VISUALIZING A FAMILIAR PERSON IN MOTION AND USING OTHER SENSORY MODALITIES - MENTALLY HEAR THE PERSON'S VOICE, FEEL THE PERSON'S TOUCH ETC.
9. VISUALIZING ONESELF ("STEP OUTSIDE" OF SELF) AND NOTING DETAILS OF ONE'S APPEARANCE
10. VISUALIZING ONESELF IN A LOCATION, IN MOTION, AND USING ALL SENSORY MODALITIES
11. VISUALIZING SITUATIONS, SENSATIONS, AND EXPERIENCES WHICH PRODUCE ACTUAL CHANGES IN THE BODY
12. VISUALIZING UNDIRECTED, SPONTANEOUS IMAGES

Visualization - In Practice

John Hortin, a new pioneer in visualization and mental imagery for learning noted:

> . . . visualization can help adults design materials, prepare for presentations, understand and retain information and gain control over their learning. Visual thinking involves seeing the external world, making visual representations of that world and using the inner eye or exercising mental imagery. Mental imagery is the ability to create images in the mind to understand, remember and enjoy experiences. We create images in our minds to organize, simplify and explain our experiences. Our interpretations of those experiences are based on our ability to "see" external stimuli and use the "inner eye" to interpret our world (1984, p. 21).

He developed powerful exercises to sharpen visualization techniques.

> The adults saw a slide program as an introduction to visualization and learned to see and read visual illusions and visual symbols through the slide program. The adults learned to communicate visually through overhead transparencies, slides, and videotapes they made. This activity is called the "participatory instructional design approach."
>
> Participatory instructional design means that adults become involved in the instructional design process at a more intensive level than is usually the case. Participatory design is a sharing of the thinking processes with the rest of the class--a 'participation" from all who are involved in the experience. The adults become their own instructional designers and learn to make their ideas visible with materials provided. The participatory instructional design approach allows researchers to encourage subjects to discuss, share and participate directly in their own learning.

Here are six steps that he asked the adult learners to use in order to develop materials for instruction:

1. Affirm your visualization abilities
2. Assume a relaxed state
3. Read the problem and data you will treat
4. Visualize the idea, problem or data (internal representations)
5. Immediately write down, act out, record, sketch, or design the images you see (external representations)
6. Evaluate and share the instructional materials as a group through dialogical encounter (Hortin, 1984, p. 21).

As another example of a visualization building experience consider the following workshop. In a response to settings is which a visualization experience would be useful, a six hour, three or two session workshop that incorporated slide presentations, lectures, discussions, overhead transparencies and the creation of simple visuals was developed. The workshop was organized around six sub-heads and included specific activities and reference materials.

The outline of the workshop is as follows:

1. Introduction to the visualization workshop with discussion of the context and rationale for the program (Reference: Strategies For Visual Learning, Francis M. Dwyer).

BEST COPY AVAILABLE

2. Slide-tape presentation: *Learning to see and understand: Developing visual literacy, Part I*. Center for Humanities, Inc. Activities:
    a. List people by color
    b. Doodle hate, love, etc.
    c. Write letters or words to express meaning, e.g., old, rich
    d. Discuss the relationship between the visual and the verbal. Use slides
    e. Question group on elements of a visual grammar. Use random slide examples

3. Lecture with transparencies on design. Cover the following topics:
    a. SAFE (simple, appropriate, functional, economic)
    b. Thinking - visual thinking. Activities examples: dreaming
    c. Blocks to visual thinking--e.g., stereotype images
    d. Bugs - e.g., taboos, social values
    e. Solutions - e.g., delay judgments, overcome fears
    f. Ideation - e.g., brainstorming, lists, synetics (substitutions)
    g. Bionics - examples from nature
    h. Change - how to effect it
    (Reference: *Design* by Hanks, Belliston & Edwards)

4. Slide-tape presentation: *Learning to see and understand: Developing visual literacy, Part II*. Center for Humanities, Inc. Activities:
    a. List non-verbal signs
    b. Discuss mood images
    c. List visual qualities of a common object
    d. Discuss the visual elements of an everyday scene - entering a room, brushing teeth
    e. Discuss value of dream images
    f. Review levels of visual meanings - random slides
    g. Describe without your hands - combing your hair or a swan dive

5. Summarize activities - list important or helpful design ideas. Collect all scribbles, doodles and visuals for review and comment.

6. Evaluate the workshop through the summary activities. Elicit comments for revision and positive action for participants. Ask for new ideas or visualizations for the workshop.

This visualization workshop proved to be very successful if the lively participant responses are any gauge. Officers of the company sponsoring the sessions suggested that the visualization training was reflected in improved attitudes toward scripts and more creative visual treatments. However, all concerned agreed that the direct benefits of such an experience are most difficult to assess in the short run.

Thus, while it may be fairly easy to judge the value of visuals for training basic manual skills or simple procedures the problem of determining the impact of visuals for training of more complex skills such as developing images for scripts is much more difficult. It is this problem of documentation of results that often prevents trainers from incorporating visual training into their curriculum for other than basic skills instruction. This aversion is understandable but unfortunate, for it is the implementation of new approaches to learning that can bring about highly desirable and profitable if not immediately measurable results.

This workshop model might be of value to other firms whose professional script writers need a visual literacy shot in the arm.

Visualization Workshop: Supportive Materials

Dwyer, F. M. Strategies for improving visual learning. State College, Pennsylvania: Learning Services, 1978.

Hanks, K., and Belliston, L. Draw! A visual approach to thinking, learning and communicating. Los Altos, California: William Kaufman, Inc., 1977.

Hanks, K., Belliston, K., and Edwards, D. Design yourself. Los Altos, California: William Kaufman, Inc., 1977.

Center for Humanities, Inc. Learning to see and understand: Developing visual literacy: Part I and Part II. (slide/tape) or selected personal slides of presenter or participants.

Visualization From Storyboarding

While visualization can certainly be encouraged by the steps suggested by Samuels & Samuels or by Hortin or by Workshops; a most valuable device for stimulating then recording visions is the "storyboard".

The storyboard is one of the most powerful techniques that we in the business of audio/visual production or instruction for AV production have. The storyboard is a most underrated but significant tool. It has been taken for granted for years, but has a long and important history in the role of bridging the gap between essential verbal and visual constructs.

Consider the definition of a storyboard as provided by Heinich, Russell and Molenda:

> . . . storyboarding is an important step in the development of audiovisual presentations. Storyboarding, an idea borrowed from film and television production, is a technique for helping you generate and organize your audiovisual materials. A sketch or some

> other simple representation of the visual you plan to use is put on a card or piece of paper along with production notes pertaining to production of the visual and verbal cues to its accompanying narration. After a series of such cards have been developed, they are placed in rough sequence . . . (1985, p 176)

The card sequence can be rearranged to edit the ideas and represent a visual/verbal program that allows the end user to plan the creation of the visual and the verbal. As Robert Bullough has observed:

> An aid to visual thinking is the storyboard. It forces you to relegate the verbal material to a secondary role, which is as it should be in the case of the photographic presentation. If you have ever tried to describe a visual phenomenon to someone else (and who hasn't), you know how difficult it is to successfully communicate the precise impression that you wish to with words alone. So, the storyboard becomes a method by which you can reveal your ideas to others in a visual mode even before you go to the time and expense of encoding them in some permanent form (1978, pp. 229-230).

The storyboard card itself is fairly simple. It can be a 5 X 7 card with a section for a visual representation of the ideas - this can be a stick drawing, copied art, a photograph taken or cut from some source or lastly a verbal (less recommended) description of the image. Another section of the card should be reserved for a script or verbal support or a narration, or even sound effects. You might also include technical information on camera shots, or the source of art work for copying or location of the video or photography shots. Any recommendation that will assist the producer or director or yourself to actualize the visual and verbal message is useful to include on the card. However, the card must not be too complex or confusing. If you try to include everything, you may well lose the original visual idea. Give the eventual producer a clear picture of the specific sequence of this program, but provide some room for creativity or individual interpretation in the production stages.

The storyboard has proven time and time again to be the bridge to creative and effective visuals. It allows the visualization process to be displayed and documented so that useful video end products can be generated. This simple but efficient device has given reality to many visual constructs elicited by creative people. It has opened the door to the actualization of the rich visual word of all who have been charged the development of visual materials. It has made the teaching of the process of production of visual materials much more effective. It is difficult to imagine being able to assist learners in the development of audiovisual materials without the use of this most useful technique.

Thus, the storyboard serves several most important functions: 1) it provides the framework for thinking visually in an organized fashion, 2) it provides a way of documenting the visual and preparing graphic ideas for eventual production, 3) it makes legitimate the process of visualization that is acceptable to various elements of the business and education sectors and 4) finally as a technique for teaching audiovisual production planning it is unsurpassed.

Visualization - The Future

As John Hortin (1980) has said, because an information society is highly visual, it is important for people to be adept at understanding and employing their visual abilities and at utilizing the visual language. Hortin pointed out that an important characteristic of being visually literate is the ability of the learner to manipulate the symbols of "inner" visual imagery as well as those of visual perception. Of equal importance is the ability to understand visual percepts as they are processed and stored as meaningful inner imagery experiences. He concluded that the understanding of visual percepts is ultimately directed towards comprehending inner imagery and how it functions.

The fast pace of change that is characteristic of an information society is a great concern of many educators. It is no longer conceivable that traditional educational methods (and the abilities they aim to develop) can adequately prepare learners to function creatively in a society of this nature. Torrance (1979) suggested that people must be able to do "future thinking".

Joey Majul observed, while imagination generally elicits positive attitudes among educators, other manifestations of visual imagery ability have not found favor. Daydreaming and fantasizing are certainly not condoned.

> These forms of imagery hold a great potential for developing other abilities and generating positive learning outcomes. Other forms such as dream imagery, synesthetic imagery, and eidetic imagery are largely ignored. Yet a few innovative researchers are finding that these forms of imagery have some educational relevance (1984, p 7).

On the whole, education has favored the development of verbal abilities over visual abilities. Education for and in a high tech information society can no longer ignore or neglect any human ability including visualization.

Majul stated,

> The problem for many educators is how to translate what are primarily psychological concepts like visual imagery or visualization into meaningful applications and ideas for educational research and practice.
>
> It is not that educators have not been aware of visual imagery ability and the potential that its development holds for the expansion of human learning. Many institutions include the

> development of imagination (a form of visual imagery) as a worthwhile goal. Yet, they fail to systematically operationalize this in educational practice (1984, p 6).

In sum, we stand to gain much from the improvement and expansion of our abilities to create visuals and visualization is a method for that can play a major role in expanding our image making. The leaders in the development of visualization strategies, Samuels & Samuels, McKim and Paivio have shown us the path for understanding the process and refining the techniques. The new pioneers, John Hortin, Joey Majul, Connie Hanson and others have provided new insights into using the movies of the mind or the mind's eye. We stand on the threshold of a new and rich visual world that we all can take part in. We can be trainers of vision teaching others to look within themselves to explore a rich inner visual world. Visualization may be much more than simply a mechanical training materials production facility. It may unlock our visions of ourselves and our individual or collective future. It is a process with great potential and very little peril. It is human centered in a highly mechanical age. It is a thinking system that requires active and participatory experiences. It is as powerful and creative as the people who use it, but reaches beyond individual or isolated inventiveness to encourage everyone to use the inner eye that we all possess. It forces us to think and to imagine before we speak or write.

References

Bullough, R. V. (1978). *Creating Instructional Materials* (2nd Edition), Columbus, Ohio: Charles E. Merrill Publishing Company.

Gueulette, D. G. (1982). A visual experience for business and industrial instructional designers. *Media and Adult Learning*, 5(1).

Hortin, J. (1980). Visual literacy--The theoretical foundations: An investigation of the research, practices and theories (Doctoral dissertation, Northern Illinois University, 1980). *Dissertation Abstracts International*, 1980. (University Microfilms No. 81-11564).

Hortin J. (1984). An example of naturalistic inquiry for problem solving with adults. *Media and Adult Learning*, 6(2).

Heinich, R., Molenda, M. and Russell, J. (1985). *Instructional Media and the New Technologies of Instruction* (2 Edition), New York: John Wiley & Sons.

Majul, J. A. (1984). *A Taxonomy of Visualization Strategies: An Investigation of Theory, Research and Practice* (Doctoral dissertation proposal, Northern Illinois University), Unpublished.

Torrance, E. P. (1962). *Guiding Creative Talent*, Englewood Cliffs, N.J.: Prentice-Hall.

Samuels, M. & Samuels, N. (1975). *Seeing with the Mind's Eye: The History, Techniques and Uses of Visualization*, New York, N.Y.: Random House.

Seidman, S. A. (1986). Music video can motivate ITV students. *Tech Trends for Leaders in Education and Training*, 31(3).

The Function of Visuals in Mass Communications

by

SANDRA MORIARTY

Visual communication is not a subject that is discussed very completely or very coherently in the mass communication literature. This became apparent in trying to develop materials for a graduate seminar in visual communication. There are references to some of the common functions of visuals, such as to get attention or to clarify, however there doesn't seem to be any thorough analysis of why we use visuals in mass communication and what we can expect them to do and not do for us.

A review of the discussions of visual communication from a variety of disciplines such as journalism, advertising and consumer behavior, magazine design, graphic arts, and international communication finds a few sentences referring to the functions and purposes of visuals but no model, outline or in-depth discussion. An analysis of these references, combined with a review of basic communication, perceptual and learning theories, might provide a framework for a typology of basic functions.

The following is a list of words used in the literature to refer to the function of visuals.

CONTENT ANALYSIS

attract/hold attention
arouse/maintain interest

direction
selection
emphasis
intensify

clarify
explain
simplify
define
contrast
compare
show relationships

memory
recall

announce
report
record
present/represent

illustrate
provide information
impart knowledge
understanding
learning
concept development

awareness
recognize
identify
discover
describe
provide details
add depth
realism

demonstrate
how-to
perform
experience

story-telling/narration
entertain

abstract
generalize

expression
emotion/feelings
establish mood

impact
inspire
persuade
influence

symbolize
aesthetics
decorate

Several things are apparent from this list. First of all, there's a semantic problem with some of the items being verbs, or actions (announce, report, illustrate), and other items being nouns, presumably representing tasks (learning, knowledge). Furthermore some of the items are done *by the visual* (emphasize, contrast) and others are done *to the views* (attract, attention, interest).

It should be possible, however, to develop an outline, or typology, of functions for visuals in mass communication from such a list. Certainly there are links between groups of these words--some obvious categories come to mind just from a casual inspection of the collection of words.

Theoretical Framework. What is missing is the logic--the internal relationships between all of these disparate items. For that dimension it might be useful to turn to conventional views of communication and mass communication theory, learning theory, perception, and consumer behavior.

First of all, it is essential that we recognize that this is a mass communication problem. That means we are dealing with pragmatic communication that operates in some kind of a transactional situation. In communication theory that means there is an identifiable source and a receiver.[1]

Furthermore the messages are goal oriented, in other words, there are definable objectives that are stated in terms of receiver response. This aspect is detailed in learning theory and consumer behavior theories.[2]

These two dimensions (transactional communication and receiver transactional directed messages) are different, for example, from fine arts where the goal of a visual is the expression of the artist's internal and unique viewpoint.

This creates a transactional, goal-directed situation for visual communication in mass media which can be expressed as a source with definable intentions, purposes, goals and objectives developing a message for a receiver who will display a unique set of message effects or responses.

Many of the words on our original list can be sorted into the two categories of source activities (present, announce, describe, demonstrate, express) and receiver effects (understand, experience, learn, know, recognize, recall).

In addition to the two dimensions of transactional and goal-directed, the words on the list also represent differences in cognitive activity. Consumer behaviorists have a number of models attempting to identify the relationship of the various responses.

Some are linear and propose that respondents process through a number of steps in arriving ultimately at a purchase decision. A common one, called the AIDA model, identifies attention, interest, desire and action as a progression of steps.[3]

Another approach looks at various types of activity and codes them as cognitive, affective and conative--known in the vernacular as think, feel, do.[4] This is very similar to the learning theory model of cognitive, affective and psychomoter. Another advertising model identifies domains of responses and hypothesizes that all of the domains are operating interactively although at different levels. This model identifies two perception domains--arousal and retention; one education domain--learning; and two persuasion domains--attitudes and behavior.

While none of these models fits this visual communication problem exactly, they do provide known schema for analyzing a structure of effects. An analysis of the list suggests that there are basic perceptual activities addressed by visuals such as getting and maintaining attention. Attention, incidentally, was the single most frequently mentioned objective in the literature review.

Another large group of items from the initial list referred to basic cognitive activities such as define, describe, explain, and clarify. Related to those activities would be another category of activities that is described in the consumer behavior literature as conative, or action oriented behavior. This would include such items as demonstrate and perform--both of which are best communicated through visual explanation. A fourth group focuses on a broad affective dimension using such terms as expression, feeling, emotion, mood, persuasion, and aesthetic appreciation.

As a result of this analysis it seems worthwhile to identify these four levels of effect-perceptual, cognitive, conative and affective--as important dimensions of visual communication in the mass media. The perceptual category acknowledges the crucial role that visuals play in getting attention. The other categories reflect the three common categories of knowledge found in both learning theory and consumer behavior theory.

The Typology. Combining these two theoretical structures we have a model that depicts two-way communication with one side expressing source intentions in the design of the visual message and the other side reflecting the effects of response of the receiver to the visual. This structure is further delineated by adding the four levels of effect. The outline for this schema of visual communication message functions is as follows:

	Source: Message Design Objectives	Receiver: Message Effects
Perceptual:		
Cognitive:		
Conative:		
Affective:		

The sources structures in certain activities or aspects as part of the message design process. These can be on any of the effects levels. The receiver, through the decoding process, generates a unique pattern of responses to the message. The following is a more elaborated model with functions and tasks included that were found on the master list of terms discussed previously. There is some attempt to match activities and responses between source and receiver but, unfortunately, there are often not semantic equivalents. The structure, therefore, is limited by the words we have to express these relationships.

References

1. Wilbur Schramm, "How Communication Works," in *The Process and Effects of Communication* (Urbana: University of Illinois Press, 1954).

2. Sandra E. Moriarty, *Creative Advertising: Theory and Practice* (Englewood Cliffs: Prentice-Hall, 1986) p. 44-45.

3. Ibid, p.50.

4. Robert C. Lavidge and Gary A. Steiner, "A Model for Predictive Measurements of Advertising Effectiveness," *Journal of Marketing*, eds, James H. Leigh and Claude R. Martin, Jr. (Ann Arbor, Mich.: Graduate School of Business Administration, 1983) p. 45-56.

5. Sandra E. Moriarty, "Beyond the Hierarchy of Effects: A Conceptual Model," in *Current Issues and Research in Advertising*, eds., James H. Leigh and Claude R. Martin, Jr. Administration, 1983) p. 45-56.

Content Analysis Bibliography

Arnheim, Rudolph. *Art and Visual Perceptions: A Psychology of the Creative Eye.* Berkely, Univ. of California Press, 1974.

Baker, Stephen. *A Systematic Approach to Advertising Creativity.* NY: McGraw-Hill, 1974.

Conover, Theodore. *Graphic Communications Today.* St. Paul: West Publishing, 1985.

Crow, Wendall. *Communication Graphics.* Englewood Cliffs: Prentice-Hall, 1986.

Dondis, Donis. *A Primer of Visual Literacy*

Hanks, Kurt; Larry Beeiston, Dave Edwards. *Design Yourself!* Los Altos, CA: William Kaufman, Inc. 1978.

Hartley, James. *Designing Instructional Text.* NY: Nichols Publishing, 1978.

Heinich, Robert, Michael Molenda, James D. Russell. *Instructional Media.* Ny: John Wiley & Sons. 1985, 2nd ed.

Hurlburt, Allen. *Publication Design.* NY: VanNostrand, 1976.

Kinder, James. *Using Instructional Media.* NY: VanNostrand, 1973.

Lain, John, ed. *Do-it-Yourself Graphic Design.* Facts of File Publications, 1984.

Miller, Neal, ed. "Graphic Communication." *Audio Visual Communication Review,* 5:3, Dec. 1957.

Moen, Daryl. *Newspaper Layout and Design.* Ames: Iowa State Univ. Press, 1984

Nelson, Roy Paul. *The Design of Advertising.* Dubuque: Wm. C. Brown Publishers, 1983, 3rd ed.

Patterson, Freeman. *Photography and the Art of Seeing.* NY: VanNostrand, 1979.

Taylor, John F. A. *Design and Expression in the Visual Arts.* NY: Dover Publications, 1964.

White, Jan. V. *Editing by Design.* NY: R.R. Bowker, 1974.

Wolff, Robert Jay. *Essays of Art and Learning.* NY: Grossman Publishers, 1971.

Catering to the Visual Audience: A Reverse Design Process

by

ROBERTS A. BRADEN
&
DARRELL G. BEAUCHAMP

Introduction

The use of 35mm slides with a recorded audio program on cassette tape has become a widely accepted audio-visual delivery method. The techniques for producing these materials, commonly known as "slide-tapes" have become almost as widely accepted as the medium itself. Depending upon the author, the sequence might vary a little, but most texts or how-to articles on the subject (e.g., Kemp & Dayton, 1985; Satterthwaite, 1976; Kodak, 1975; Braden, 1982) would recommend something similar to this:

1. Determine purpose or assess need. (planning)
2. Determine subject matter content. (the message)
3. Write a script (creating a narrative/scenario to deliver the message)
4. Prepare a storyboard (designing thumbnail sketches to suggest how each script idea will be visualized.)

    NOTE: Steps 3 and 4 are inverted by some experts as an aid to script development. This variation involves the use of storyboard cards which can be shuffled into various sequences until the most workable combination is found. We mention this because the shuffle method is applicable to the reverse design process which will be discussed later in this paper.

5. Shoot pictures and record script (create the slides and the tape.)
6. Try the slides with the tape.
7. Revise as needed (modify tape and/or shoot new slides to make the audio and visuals compatible.)
8. Pulse the tape to advance the slides.
9. Present the slide-tape to its intended audience (Product evaluation may or may not take place at this time -- it should.)

The above list becomes more detailed and more complicated when the simple one projector, one screen slide-tape medium gives way to a more spectacular multi-image format (e.g., Benedict & Crane, 1973; Kenny & Schmitt, 1979.) However, the basic flow of recommended events is the same. Clearly, these techniques work or we would not find them espoused so often. Stated another way, the list above represents an appropriate process. BUT ... the above sequence is only one of four ways to do it -- four appropriate ways, each fitted to one of four kinds of slide tape.

The Visual-Verbal versus Sound-Verbal Matrix

As Wileman (1980) has pointed out, there is an entire continuum of visual-verbal combinations. In the slide tape medium, the points on this continuum represent options for the program designer. Thus, Wileman's typology is of great value. However, it is only concerned with visual and verbal images.

The slide-tape program, the medium under consideration here, combines an audio track with its images. The audio track has a continuum of its own -- the sound-verbal continuum. Creating any audiovisual product, including a slide-tape, involves both of these variables. To easily understand the nature of these two continua and their interactions, a matrix has been created. (See figure 1.) The extremes of each continuum are displayed as a convenience in creating the two-by-two matrix. This convenient form offers a useful visual model which does no violence to reality so long as the reader keeps in mind that for both continua the ratio of verbal to non-verbal is infinitely variable.

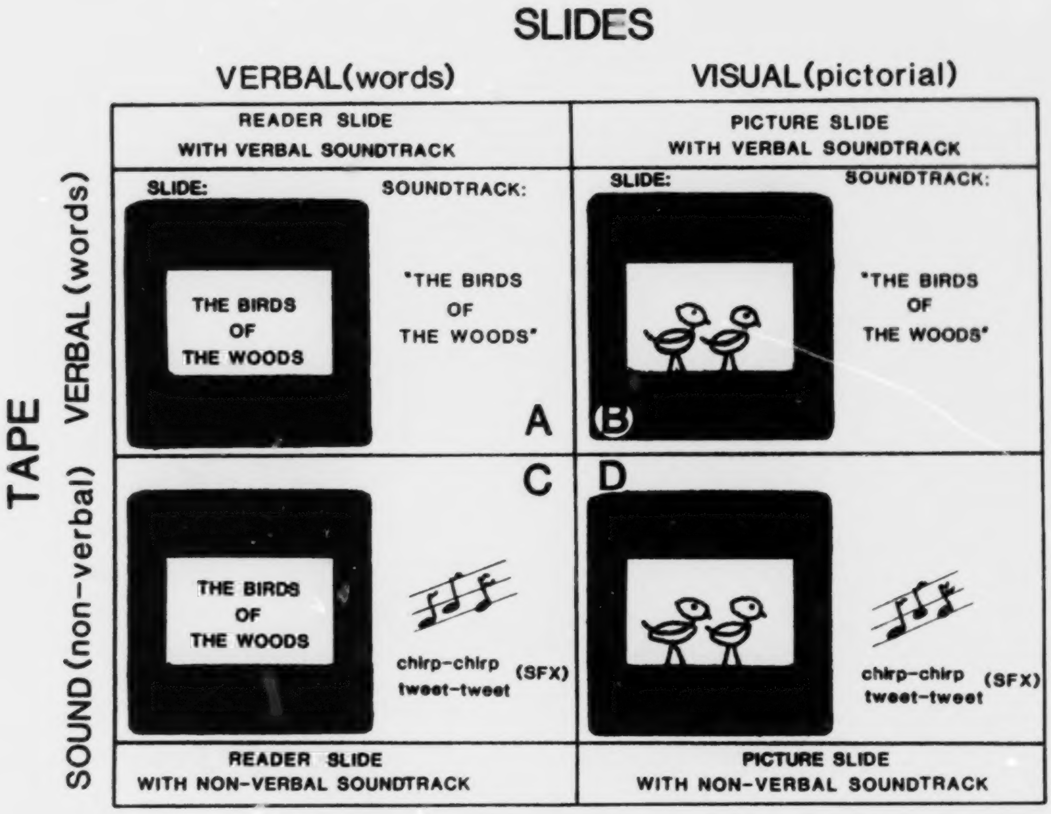

SLIDES
VERBAL(words)
VISUAL(pictorial)
TAPE
VERBAL (words)
SOUND (non-verbal)
READER SLIDE WITH VERBAL SOUNDTRACK
PICTURE SLIDE WITH VERBAL SOUNDTRACK
SLIDE:
SOUNDTRACK:
THE BIRDS OF THE WOODS
"THE BIRDS OF THE WOODS"
A
B
C
D
chirp-chirp tweet-tweet
(SFX)
READER SLIDE WITH NON-VERBAL SOUNDTRACK
PICTURE SLIDE WITH NON-VERBAL SOUNDTRACK

Figure 1. The Sound Versus Slide Matrix

BEST COPY AVAILABLE

First, consider the visual-verbal continuum. At the visual extreme we have pictorial images displayed on the screen that convey the entire message without using words. At the verbal extreme are images that consist entirely of verbal symbols. These are what Wileman calls "reader slides" (p.35).

Next, compare the sound-verbal continuum. The corresponding sound extreme is characterized by noises recorded on the soundtrack (music, sound effects, noises of nature) that convey the entire message without words. At the verbal extreme are script driven productions consisting entirely of spoken words.

An initial advantage of portraying these factors in the matrix relationship is that it highlights not only the four different sound-visual combinations, but it also establishes four distinct kinds of slide-tape programs. Henceforth we will classify slide-tapes as one of the four types suggested below, but we acknowledge at this point that there are many blends not covered by our minimal scheme.

Types of Slide-Tape Programs

To simplify identification of the four categories of slide-tape programs, the letter designators of the quadrants of the matrix are assigned as type labels. As a result, Type A represents a slide-tape made up of reader slides and talk; Type B represents a combination of pictures and talk; Type C represents a combination of reader slides and non-verbal sound (e.g., music); and Type D is a slide-tape made up of pictures with non-verbal sound.

The production sequence described in the first paragraph of this paper is the procedure that would be followed to produce a true composite (Type ABCD) slide-tape program. That is, a program with a mixture of slides from several points on the visual-verbal continuum with a tape containing verbal and nonverbal sound. This sequence closely resembles the procedure that would be followed to produce a pictorial program with a word based sound track (Type B). It also resembles -- but not so closely -- the sequence used to produce a Type C slide-tape with reader slides and sound effects. The major sequential difference between Type B and Type C production lies in the point at which the shot list is developed. (Obviously no storyboarding step is required in a Type C production.) The thing that Types B and C have in common with the composite Type ABCD is that the information load is shared between the sight and sound components so that one embellishes the other. The design sequence is contrived to support that symbiotic relationship.

With Type A slide-tape programs the information load of the two channels is shared in a different way. The message may be split between printed and spoken words, duplicated with the identical message on both channels, or partially duplicated. But, the message of one channel is not really embellished by being repeated in the other. The script driven Type A program follows the procedures of the speech writer. Although special style considerations apply to script writing, the procedures of authors dominate all Type A production. Very little visual design is called for even though the "look" of the reader slide can be effected by typography. In truth, the contribution of the visual artist in a Type A production comes as a last touch up step.

Since the production sequences of Types B and C are commonly accepted, and discussed in detail elsewhere, that leaves only Type D production techniques lacking adequate widely accepted guidelines. This is not surprising. The essence of both the sound and visual components of Type D have one thing in common. They both are used to convey aesthetic messages. Production of such programs transcends the boundary between verbal and artistic communication. In the educational sector the difficulty of producing Type D-like materials is hidden behind the wall of ignorance which surrounds learning in the affective domain.

The Aesthetic Extreme

The production sequence for the Sound-Visual (Type D) slide-tape program follows this sequence:

1. Select a group of existing visuals or create a large set of slides. (Probably a body of existing visuals would be a large collection of slides, although a collection of photographs or prints could be used.)
2. Analyze the pictures individually and together. Seek, a. visual themes; b. natural design elements like color, texture, line, and shape; c. the artistic and aesthetic intangible.
3. Arrange and re-arrange (and re-arrange) the slides until a creative message emerges. This is the step that calls upon the shuffle process. Slides are viewed in many combinations upon a light box where their relationship to each other is most easily seen.
4. Create a sound track. (Find or create music, SFX, wild sounds, or whatever is aesthetically correct to complement the slides. Steps 3 and 4 can be interwoven.
5. Pulse the tape. (Usually the slides will be cut or dissolved to the beat of the music. However, if original music is created in step 4, pulsing will make the visual transitions match those of the music.)
6. Prepare a shot list to strengthen weaknesses and to fill "holes" in the program. (The items on a Type D list may be much less well defined than items on a typical Type ABCD shot list, e.g., item: "find something natural that will provide a color transition.")
7. Decide whether any verbalization is necessary. (Titles, captions, credits?) Create any needed verbal slides. Minor script writing may be called for.
8. Assemble and test the program. (Run the show.)
9. Review the finished program to identify the nature of its impact, and the message(s) that it conveys. (determine the subject content)
10. Determine when and where the program will be used, i.e., establish its ultimate purpose.

The Reverse Process

The processes for producing Type D slide-tapes are so different than for any of the other types that it is tempting to make a flat declaration that everything is backward. However that would be both an oversimplification and not quite true. What is clearly true is that the processes are very different, and many things about the procedure are turned about. The more important differences are shown in figure 2.

Besides the key differences shown in the chart, there are other procedural events which usually are reversed from Type ABCD to Type D. For example, the determination of content is an early step in the ABCD procedure, but would ordinarily occur as a post-production step with a Type D slide-tape.

Type ABCD	Type D
* Purpose is determined first.	* Purpose is determined last.
* Script writing happens very early in the procedure.	* The scripting function happens very late in the procedure.
* The shotlist is prepared after the script is written.	* The shotlist is prepared before the script is written.
* Pictures conform to the cognitive message.	* Pictures help determine the aesthetic message.
* The sound track conforms to the cognitive message.	*The sound track helps determine the aesthetic message.
* Selection of music occurs very late in the procedure.	* Selection of music occurs very early in the procedure.

Figure 2. Chart of Reversals

Catering to the Visual Audience

Few occasions present themselves to program makers to produce pure Type D slide-tape programs. Only a few artists have found the slide-tape medium, so not many Type D productions are done "for art's sake." Maybe that is just as well. Perhaps the future of the picture-slide/nonverbal-sound slide-tape lies in conveying messages and promoting learning in the affective domain. Maybe, too, the medium is well suited to stimulate interaction within that segment of the population called "visuals" (as opposed to haptics). The meteoric rise of the rock video attests to the fact that a huge segment of the population appreciates the combination of vivid pictures and sound. The combination is a winner. Its similarity to the Type D slide-tape is clear. Of course, the music drives the rock video (and its cousins like the opening scenes of Miami Vice and other mod shows). The combination is also a winner when driven by the images. Importantly, the image driven sight-sound program has great educational potential.

Research is needed to learn how catering to the visual audience can help achieve the integration of the affective and cognitive domains suggested by Martin and Briggs (1986). The slide-tape more so than the video seems to be the medium most likely to be used in achieving that integration. The Type D slide-tape, with picture slides and nonverbal sound, is recommended as the best type of slide-tape to do the job. Type D caters to the visual audience.

References

Benedict, Joel A. and Crane, Douglas A. (1973) *Producing multi-image presentations.* Tempe, AZ: Arizona State University.

Braden, Roberts A. (1983) Visualizing the verbal and verbalizing the visual. In *Seeing ourselves: Visualization in a social context.* Blacksburg, VA: International Visual Literacy Association, Inc.

Braden, Roberts A. (1982) Phases in the evolution of an instructional slide tape. Paper presented at Virginia Educational Media Association annual convention. Roanoke, Virginia.

Kemp, Jerrold E. and Dayton, Deane K. (1985) *Planning and producing instructional media*, 5th Ed. New York: Harper & Row.

Kenny, Michael F., and Schmitt, Raymond F. (1979) *Images, images, images.* Rochester, NY: Kodak Co.

Kodak, Eastman Co. (1975) *Planning and producing slide programs.* Rochester, NY: Kodak Co.

Martin, Barbara L. and Briggs, Leslie J. (1986) *The affective and cognitive domains: Integration for instruction and research.* Englewood Cliffs, NJ: Educational Technology Publications.

Satterthwaite, Lester L. (1976) *Audiovisual utilization, production, and design.* Dubuque, Iowa: Kendall/Hunt.

Wileman, Ralph E. (1980) *Exercises in visual thinking.* New York: Hastings House.

K-12 Curriculum Integrated Library Media Skills: The Impact of Visual Motivators

by

BEVERLY L. GOOD

The ability to independently search and locate adequate materials to conduct research is an essential skill in today's information oriented society and falls within the category of traditional library media skills. Access to data base collections with on-line retrieval is becoming more of a reality within the average individual's reach each day that passes. The electronic world is a powerful source of fascination for young people, so it is not surprising that the key-word jargon of the computer age has become an integral part of the average student's vocabulary. We're experiencing delight in seeing the image of the old-time library and its stereotypical atmosphere transformed into a futuristic realm for the transfer of instantaneous information at the touch of the fingertips. The utilization of the card catalog was downright drudgery, so it is understandable that the rapid results of electronic retrieval appeals to all of us.

Library media specialists have been capitalizing on the newer tools at hand. A student is taught to use library pathfinders to locate resources more easily which should free him to focus attention on the purpose of his search enabling him to proceed through the analysis, synthesis, and evaluation steps necessary to reach a valued judgment. But before this can occur a foundation must be laid starting at the elementary level and proceeding through twelfth grade. A scope and sequence program of library media skills developed cooperatively and implemented by instructional library media specialists and classroom teachers must be established and integrated with the subject curriculum to bring about effective results. Automation is relieving many of the burdensome and mundane repetitive tasks in library management so that media specialists can concentrate more on consulting with teachers and students in an effort to make the most effective use of resources. What exactly has been taking place in the last five years? Tremendous change. The literature reflects this. Audiovisual materials are still highly viable for the purpose of library orientation and subject content instruction, and good quality software programs have appeared on the market encompassing a full range of K-12 library media research and study skills to enhance day-to-day instruction so that students may pursue their interests independently and hone their information-seeking skills.

During the past decade there have been major changes in library media skills instruction within the K-12 school culture. The typical classroom collection once provided classics for leisure reading, and a chapter in the fourth grade social studies text explained the use of audiovisual equipment, maps and globes, and reference sources. Many new schools were built with the Media Center the focal point; or an addition would house several new classrooms and a modern Instructional Materials Center. Professionally certified librarian/audiovisual coordinator/teachers were directing the media centers. Depending on the size of the school they may have had to divide their time among two or more facilities with little opportunity to consult with teachers on an individual basis and formulate integrated lessons in library media skills and left it all to this new professional. The "library" period became a "prep" period for many teachers. However, as we move along in the eighties the teachers are returning to the media center to plan integrated instruction with the encouragement and assistance of library media people. Cooperatively planning and teaching library media information skills that are integrated within the K-12 curriculum is becoming a major function of instructional library media specialists not only in Wisconsin but as the library literature indicates, across the Nation as well (Van Vliet, 1984). I was recently told by a teacher that she was "jolted" to learn of the immense changes that have been taking place altering her previously perceived opinion of the function of the "school librarian." Fortunately teachers are becoming particularly receptive and willing to participate with media specialists in team planning and teaching to reach common educational goals. They are realizing as Thomason (1981) points out that the media specialist is highly knowledgeable in learning theory. He has studied Pavlov, Skinner, Glasser, Maslov, Piaget, Thorndike, Dewey, James, and others. He knows about the behavioral modification model, developmental models and information processing models." He is more than just a "keeper of books."

Kenneth Haycock in his keynote speech to the 1984 Conference of the International Association of School Librarianship has asserted that it is important that the role of the school librarian be recognized as an equal partner in the educational process. That the major task is to work with classroom teachers "to plan, develop, and implement units of study which integrate research and study skills." This role clarification, supported by changes in teacher-library media education is necessary to modify the current role of school media center personnel with the ultimate goal to help students learn to process information effectively and to become informed decision-making citizens in our democratic societies.

During the past five years, a course entitled Developing Library Media Skills has been taught at the University of Wisconsin-Whitewater in an effort to prepare pre-professional library media specialists for their future role as K-12 Instructional Library Media Specialists. The subject integrated library media skills approach was introduced with students utilizing both the Walker, and the Hart texts. Emphasis is placed on the importance of becoming totally cognizant of an integrated K-12 curriculum through active participation at the district and building levels on curriculum planning committees. Participation on text book adoption committees is also recommended. A copy of each curriculum guide as well as each text book in use should be close at hand for immediate referral by the media person. Needless to say the more familiar the library media specialist becomes with the curriculum in all areas the more insight that he/she has with regard to the needs of teachers and students. By working with the classroom teacher to integrate library media skills the media specialist can share his/her expertise regarding the advantages in format of certain materials to meet the needs of the diverse learning rates, styles, interests, and strategies for teaching as well as meeting the needs of individual teaching styles. Working together as a team enables each person to utilize their special strengths to the advantage of the students.

According to Zlotnick (1984) there is no single best way to integrate library media research and study skills and content teaching. Instead it is a multifaceted process involving the expertise of library media specialists and classroom teachers, content area skills, and library media research and study skills processes. In my work with a school district recently, I divided a large group into smaller segments by placing one media specialist with every three or four teachers to form individual units. They were assigned to select a grade level, choose a subject mandated by their district curriculum, and by utilizing the scope and sequence of the Wisconsin Library Media Skills Guide (curriculum) they were to determine study and research skills that were to become integrated and taught cooperatively between themselves and the media specialist. By beginning with a NEEDS assessment they were able to work through the instructional design model provided them to plan their unit of instruction. The needs assessment is the first step in the instructional design process (Turner, 1985). The purpose is to establish content around which the instruction is to be designed. What is the definition of NEED?

> "A need is a gap between what should be and what is."
> (Kaufman and Taylor, 1980).

For obvious reasons, both teacher and media specialist realize that there are not enough hours in the day for the media specialist to become completely involved and interacting with every teacher at all times, but there are several levels at which the media specialist may become a part of the total picture. Four potential levels of intervention or involvement by the library media specialist during the instructional design process are as follows:

1. No Involvement: Perhaps no intervention is required. Perhaps the teacher has not requested involvement by the center. Perhaps the library media specialist is unwilling or unable to intervene.

2. Passive Participation: This level of intervention at a given step involves little or no interaction between the library media specialist and the faculty member. The library media specialist selects and maintains materials, equipment and facilities which assist the faculty member in implementing a particular step.

3. Reaction: As a teacher performs a particular step, he/she may randomly request some sort of assistance from the library media center program. This intervention would be informal and not designed to increase the teacher's ability to perform the step more effectively at a later date.

4. Action/Education: This level of intervention by the library media specialist most closely resembles formal instructional design consultation as described in the literature. At this level, the library media specialist often works as part of a team implementing a number of the steps in the instructional design process. The library media specialist might present an in-service at one or more of the steps. Often the purpose of involvement at this level is to increase the teacher's ability to perform one or more of the steps subsequent to intervention." Turner, 1985.

A media specialist who builds a collection of units on a particular topic so that a teacher may refer to it when deciding on instructional content is involved in instructional design consultation at the Passive Participation level. This was perceived as a need by the media person so we could say that the NEEDS step was assessed, and fulfilled. There are areas of overlap, particularly between levels. The levels approach was formulated to ease the tension between what was perceived as a formidable and impossible-to-implement technique and the real world of school library media practice. In broadening the concept of Instructional Design consultation, a logical continuum is established, providing a pathway for increased involvement by the library media specialist (Turner).

It is recommended that both classroom teachers and library media specialists become familiar with Turner's model for helping teachers teach. Instruction which has been systematically designed and implemented have several basic steps that are common to all:

"(1) deciding what to teach (needs assessment)
(2) getting to know the student (learner analysis)
(3) deciding what the student should be able to do after instruction (performance objectives)
(4) preparing and giving tests (test design)
(5) obtaining teaching materials (material selection)
(6) planning instructional activities (activities development)
(7) teaching (implementation) and
(8) considering the effectiveness of the teaching (evaluation)."

The State Department of Public Instruction in Wisconsin has established guidelines for curriculum instruction in the subject areas which are taught in Wisconsin schools including the sanction of *The Wisconsin Library Media Skills Guide* published by the Wisconsin School Library Media Association, a division of the Wisconsin Library Association. This guide was developed by the education committee in 1979 and is currently being updated to reflect areas in which there have been advancements in technology for the most part. Its purpose was to develop "media programs that integrate with the instructional programs of our schools. The basis for this integration is a media skills program which (1) aims to make students independent users and sometimes producers of various media, and (2) aims to make students effective learners through using media resources. Since the emphasis in this guide is the integration of media skills with all curricular areas, it should be stressed that the development of a school's program and the responsibility for the instruction must be shared by teachers and media specialists."

For the unbeliever, the library literature of the eighties has provided a wealth of information that should become useful dialog for both teachers and media specialists on the topics of library media instruction and curriculum integrated library media skills instruction. Further the series edited by Paula Kay Montgomery, Teaching Library Media Research and Information Skills Series, among others, has been an impetus for planning and developing instructional strategies to meet the divergent learning characteristics of young people through the implementation of a viable media program. Seaver (1984) has written:

> "an integrated approach with joint planning, teaming for instruction and flexible scheduling with one or two teachers would be a reasonable start. The goal for each succeeding year might be to enlist one or two classroom teachers to work cooperatively with the library media specialist."

A cooperative, systematic approach to library media skills instruction involves the library media specialist and the classroom teacher who set objectives, determine prerequisite skills, identify and use instructional strategies and materials, and evaluate student achievement in the program." (Zlotnick). Accordingly, she goes on to state:

> "Integrating library media research and study skills instruction involves the following procedural steps:
>
> 1. Identification of content skills objectives
> 2. Identification of library media research and study skills objectives
> 3. Development of integrated objectives
> 4. Development of instructional activities through the determination of:
>   a. Sequence of instruction
>   b. Instructional resources
>   c. Instructional strategies
>   d. Teaching responsibilities
>   e. Grouping of students for instruction
>   f. Time for instruction
>   g. Space for instruction
> 5. Implementation of instruction through:
>   a. Introductory activities
>   b. Developmental activities
>   c. Culminating activities
> 6. Evaluation of student learning
> 7. Revision of instructional unit and activities."

When planning units, the impact of visuals for motivational purposes should not be overlooked. The only difference between elementary and secondary visuals would be in the level of the message and the degree of sophistication of the graphics. Clever utilization of a message, a logo, clip art, coupled with a bit of creativity can transform a bulletin board, assignment sheet, task card or challenge center into an interesting assignment project whether it be a common report or a multimedia production. Utilizing visuals to motivate your gifted and talented as well as your underachievers can produce equally desired success. We should not neglect to bring graphics to the attention of the secondary student whose life evolves around the colors, shapes and sounds of audio/visuals.

If our mission as educators is to provide for an enlightened citizenry capable of independent inquiry and a high order of thinking skills so that they may become critical consumers, it is essential that our young people understand the relationship between learning the skills necessary to search for information. As they take more of the responsibility for learning these skills through independent research they will achieve self-confidence and self-esteem that comes from successfully mastering library media research skills. It is our role to assist students in learning how to gather data that is necessary for those decision-making choices facing them in the years ahead.

BOOKS

Cleaver, B. P. and Taylor, W.D. (1983). Involving the School Library Media Specialist in Curriculum Development. Chicago: American Library Association.

Hart, T.L. (Ed.). (1985). Instruction in School Media Center Use. Chicago: American Library Association.

Seaver, A. R. (1984). Library Media Skills: Strategies for Instructing Primary Students. Littleton, CO: Libraries Unlimited.

Silver, H. F. and Hanson, J. R. (1982). Teaching Styles and Strategies: Techniques For Meeting the Diverse Needs and Styles of Learners. Moorestown, NJ: Hanson Silver.

Thomas, J. L. (1978). Turning Kids On To Print Using Non-Print. Littleton, CO.: Libraries Unlimited.

Thomason, N. W. (Ed.) (1981). The Library Media Specialist in Curriculum Development. Metuchen, NJ: Scarecrow.

Turner, P. M. (1985). Helping Teachers Teach. Littleton, CO.: Libraries Unlimited.

Van Vliet, L. W. (1984). Media Skills for Middle Schools: Strategies for Library Media Specialists and Teachers. Littleton, CO.: Libraries Unlimited.

Walker, H. T. and Montgomery, P. K. (1983). Teaching Library Media Skills. Littleton, CO.: Libraries Unlimited.

Wehmeyer, L. B. (1984). The School Librarian as Educator. Littleton, CO.: Libraries Unlimited.

The Wisconsin Library Media Skills Guide. (1979). Madison, WI.: Wisconsin School Library Media Association, division of Wisconsin Library Association.

Zlotnick, B. B. (1984). Ready for Reference: Media Skills for Intermediate Students. Littleton, CO.: Libraries Unlimited.

JOURNAL ARTICLES

Bertland, L. H. (1986, Winter). An overview of research in metacognition: implications for information skills instruction. School Library Media Quarterly, 14, 96-99.

Black, N., Roberts, K., and White, V (1986, May-June). School assignments: a public library responsibility. Emergency Librarian, 13(9), 9-14.

Blazek, R. (1982, Winter). Influencing students to use media center materials: a research study. School Library Media Quarterly, pp. 147-151.

Callison, D. (1986, February). School library media programs and free inquiry learning. School Library Journal, pp. 20-24.

Considine, D. (1985, Summer). Media, technology, and teaching: what is wrong and why? School Library Media Quarterly, pp. 173-182.

Cooper, J. (1986, Winter). Library/research/reference skills: the Kentucky essential skills test. Kentucky Libraries, 50, 14-16.

Cubbage, C. (1986, Spring). Slide-tape orientation programs: still an option for the eighties. Research Strategies, 4, 75-80.

Eisenberg, M. (1984, Fall). Curriculum mapping and implementation of an elementary school library media skills curriculum. School Library Media Quarterly, 12(5), 411-418.

Gavryck, J. (1986, May). Information research skills: sharing the burden. Wilson Library Bulletin, 60, 22-24.

Gieschen, R. (1986, February). High school bibliographic instruction using primary resources. Show-Me Library, 37, 13-15.

Gilliland, M. J. (1986, Winter), Can libraries make a difference? Test scores say "yes!" A program to review library media skills. School Library Media Quarterly, 14, 67-70.

Grazier, M. H. (1979). The curriculum consultant role of the school library media specialist. Library Trends, 27, 263-279.

Hannigan, J. and Vandergrift, K. (1986, Summer). Elementary school library media centers as essential components in the school process. School Library Media Quarterly, pp. 171-173.

Hardy, A. (1983, March-April), The librarian and the needs of gifted students. The Book Report, pp.21-25.

Haycock, K. (1985, Spring), Strengthening the foundations for teacher-librarianship. School Library Media Quarterly, 13(2), 102-109.

Johnson, K. A. (1981, Summer). Instructional development in schools: a proposed model. School Media Quarterly, 9(4), 252-271.

Kachel, D. E. (1986, May). Online bibliographic searching: a pilot project (at Ephrata Senior High School). School Library Journal, 32, 28-30.

Kemp, B. E. and others. (1986). Building a bridge: articulation programs for biliographic instruction (In Association of College and Research Libraries. National Conference, 4th: 1986: Baltimore, MD. Energies for transition, pp. 52-54.)

Kenney, D. J. and Wilson, L. J. (1986, May). Developing a partnership in library instruction. College Research Library News, 5, 321-322.

Kuhlthau, C. C. (1985, Winter). A process approach to library skills instruction. School library media quarterly, pp. 35-40.

Liesener, J. W. (1985, Fall). Learning at risk: school library media programs in an information world. School Library Media Quarterly, pp. 11-20.

Mancall, J. C. (1985, Summer). Teaching online searching: a review of recent research and some recommendations for school media specialists. School Library Media Quarterly, 13, 215-222.

Nipp, D. and Straub, R. (1986, Spring). The design and implementation of a microcomputer program for library orientation. Research Strategies, 4, 60-67.

Oberg, A. (1986, September-October). The school librarian and the classroom teacher: partners in curriculum planning. Emergency Librarian, 14(1), 9-14.

Robbins, W. H. (1984, April). Library instruction: a partnership between teacher and librarian. Catholic Library World, pp. 384-387.

Stripling B. (1984, Summer). What price ID? a practical approach to a personal dilemma. School Library Media Quarterly, pp. 290-296.

Tessmer, M. (1985, December). Applications of instructional design to library instruction. Colorado Libraries, 11, 28-31.

Turner, P. M. and Naumer, J. N. (1983, Fall). Mapping the way toward instructional design consultation by the school library media specialist. School Library Media Quarterly, 12(1), 29-37.

Collecting Stories and Images
Using Visual Media with Oral History

by

BEVERLEE KISSICK

> **To place on record events never previously related and to make contemporary history accessible to later generations, is an activity deserving of notices and commendation. Genuine research consist not in mere rearrangement of material that is the property of others, but in the establishment of an original body of historical knowledge.**
>
> **Flavius Josephus**
> **ca 70 A.D.**

Introduction

"Granddad, do you know when and where your grandparents were born?" "Do you remember any of the stories your mother or dad told you, Grandmother?" "Where did you live when you were a child, Dad?" Numerous questions are asked by children because of their natural inquisitiveness and interest in their families and community people around them (Kachaturoff and Greenebaum, 1981). People (consciously and/or unconsciously) compare living today to living in the past, but few realize they are participating in a process known as oral history.

Since mankind began to use speech, information has been passed from one generation to another by word of mouth. The grandfather telling his grandchild a story at bedtime is a form of oral history. The ancient Greek historian, Herodotus, used oral history more than two thousand years ago (Bernhardt, 1980).

In the more recent past, Allan Nevins founded the oral history program at Columbia University in 1948. His project involved gathering eyewitness accounts with a tape recorder. Since then hundreds of oral history projects have developed throughout the United States. People from all walks of life have been interviewed and recorded (Bernhardt, 1980).

Oral history is a "verbal testimony" (Kachaturoff and Greenbaum, 1981, p. 18) concerning the past. Oral history is the recording of personal, individual experiences relating to larger historical events, local/personal history or the common life in general.

Oral history is divided into three categories: (1) biographical oral histories collect information about the life and work of individuals, (2) event oral histories are concerned about a single event and a number of participants are interviewed, (3) topic oral histories are based on general topics such such as Italian/Americans in a community. Most oral histories are a combination of all three types (Bernhardt, 1980).

Visual Literacy and Oral History

Visual literacy can be incorporated into an oral history program. Visual literacy is the learned ability to interpret visual messages accurately and to create images in a variety of media in order to communicate more effectively (Considiner, 1986). Oral history provides an opportunity for interpretation and creation of visuals through the use of the still camera and the video camera. Collections of photographs, drawings, portraits, newspaper clippings, home movies, yearbooks, old magazines, maps, and other visuals can expand the student's awareness of visual communication as he or she is participating in an oral history project. Visuals are iconic and serve as concrete clues to meaning. The use of both print and nonprint materials allows students to plan, create, and combine "visuals and verbals for intentional communication" (Fransecky and Debes, 1972, p. 12). Visuals add an illustrative dimension to oral histories and can be archived with the tapes (Young, 1980).

The Interview and Oral History

Macrorie (1980, p. 147) states, "interviewing is a basic human act of communication, like telling a story." Interviewing enables the student to "connect the outside world of family, heritage, culture, and community with what is taking place in school" (Kazemek, 1985, p. 212). Interviewing provides the student with the opportunity to link the past with the present. In oral history programs, interviewing helps students understand history by learning about the lives of people around them and encourages students to move beyond their own experiences (Kazemek, 1985). Another advantage is the fact that students will be actively participating in the preservation of significant historical knowledge. Participation in an oral history project can help students realize they are making a lasting contribution to their community (Machart, 1979). Materials compiled from oral interviews add dimension and human warmth to history (Christensen and Ridley, 1985).

The School Curriculum and Oral History

In 1966, Eliot Wiggington accepted a position at Rabun Gap, Georgia to teach English to high school students. Early in the school year his classes began to collapse, so he took a risk and sent his students (armed with tape recorders and cameras) to interview community persons. This successful cultural journalism experiment became known as the Foxfire concept. Today over 200 "Foxfire" projects have been integrated into school curriculums across the United States (Hatcher and Olson, 1982).

The basic techniques of oral history can be mastered by elementary students as well as junior high and high school students. The benefits are tremendous. Besides providing an intriguing way to accumulate historical information, oral history programs encourage students to develop an appreciation for their heritage and an understanding that they, their families, and other community members are participants in history (Harris, 1978).

Oral history projects can result in incomparable learning opportunities. Through the medium of interviews with family or community members, students develop a range of important skills such as how to formulate and ask appropriate questions, how to listen, how to operate a variety of media equipment, how to use research, investigation and interview techniques, how to write, and how to interpret and create visuals. In addition, students have the opportunity to participate in gathering history on a very personal, one-on-one basis. Oral history is active learning rather than passive learning. Because of the student's direct involvement with the learning process, the knowledge he or she gains has a better opportunity of being retained (Gerard, 1983).

Topics for Oral History Projects

There are a limitless number of possible subjects for oral history projects. Students of all ability levels can use their unique skills since every project can be geared to the interests and talents of each student (Gerard, 1983).

Topics for oral history programs are:

1. Family history
2. Transportation
3. Clothing and dress
4. Holidays and celebrating
5. Popular sports
6. Ethnic groups in a community
7. The Great Depression
8. Wars - World War I, World War II, Korean War, Vietnam War
9. Historic buildings
10. Schools
11. Biographical sketches
12. Life styles
13. Songs, legends, myths
14. Food
15. Games
16. Industry
17. Arts and crafts
18. Agriculture
19. Careers
20. Municipal or county government

Instructional Design and Oral History

An oral history program must have a plan. The following is an instructional design for an oral history project.

INSTRUCTIONAL DESIGN FOR PLANNING AN ORAL HISTORY PROJECT

1. What need exists for your program? Describe the people you want to involve---age, grade level, current level of knowledge skills, and attitudes relating to the the topic.
2. How will your oral history project support and complement (not duplicate) other school or community programs?
3. What do you want to accomplish through this program? Goals and objectives
4. What do you expect people to learn as a result of participating in your program?
5. Describe the activities that you will use to meet these objectives. Include specific materials (print and nonprint), resource persons and equipment that you will need.
6. List any materials or equipment that you will need to purchase. Indicate where the project will be held---library media center, classrooms, or other community locations.
7. Who will be involved in the program, and what are their roles--teachers, parents, administrators, library media professionals, students, volunteers, community groups or individuals?
8. Who will help with the planning? (indicate responsibilities for each person) Who will help supply materials? (indicate what type of support each person might be able to provide) Who will help implement the program? (indicate responsibilities for each person and why you chose them)
9. Why do you think this oral history project will work in your particular situation? What potential problems do you foresee? How might you handle them?
10. How will you evaluate the project? What techniques do you plan to use to gather evaluative information? Be sure that you get feedback from students or children who participate, adults who help you with your program, and adults who interact with participants---parents, teachers, etc.

IDEAS FOR EVALUATIVE TECHNIQUES

1. Personal interviews with students who participate.
2. Personal interviews with adults who are involved in the program.
3. Personal interviews with adults who are involved in the program.
4. Personal interviews with parents or teachers of participants.
5. Written evaluation forms filled in by students.
6. Written evaluation forms filled in by adults.
7. Statistics on number of participants or tests.
8. Samples of student's projects as a result of the program.

School Goals and Oral History

An effective teacher analyzes district goals and develops a plan for achieving the goals during the school year. Following are the school district goals of Geary County Unified Schools, Geary County, Kansas. An oral history project would demonstrate accountability to the goals listed.

SCHOOL DISTRICT GOALS

Excerpted from: Board of Education Handbook, Geary County Unified Schools, Geary County, Kansas.

Goals Toward Achieving Civic Responsibility

- Promote attitudes of good citizenship
- Encourage democratic ideas and ideals

Goals Toward Achieving Economic Efficiency

- Develop basic skills (read, write, compute, analyze and acquire factual information)
- Understand the environment
- Develop management skills
- Develop occupational awareness and skills

Goals Toward Achieving Self-Realization

- Develop attitudes of self-worth and self-esteem
- Develop good character and self-respect
- Develop communication skills (oral and written)
- Develop a desire for learning
- Create an awareness of the ideas of health and safety
- Encourage an appreciation of culture and beauty
- Develop attitudes toward the wise use of leisure time

Goals Toward Achieving Success in Social Relationships

- Develop a respect for others
- Develop an appreciation for other cultures
- Develop the skills of family living

Conclusion

Oral history is experiencing a revival in recent years. The success of the Foxfire concept, the interest in family studies, and the advancement of technology have contributed to the interest in oral history programs. The use of video cameras and recorders is expanding because of the ability to capture the visual image as well as the voice. Video equipment also eliminates the time consuming task of transcribing the audio tape.

References

Bernhardt, D. (1980). Working women roots an oral history primer. Ann Arbor, Michigan: The University of Michigan-Wayne State University.

Christensen, L. O. & Ridley, J. B. (1985). A new challenge for Clio's ancient mask: oral sources for a history of educational institutions. Social Studies, 76, 65-68.

Considine, D. M. (1986). Visual literacy and children's books: an integrated approach. School Library Journal, 32, 38-42.

Fransecky, R. B., & Debes, J. L. (1972). Visual literacy: a way to learn - a way to teach. Washington, D.C.: Association for Educational Communication and Technology.

Gerard, H. (1983). Listen up! history lives and talks - in your town. Learning, 12, 106-108.

Harris, J. A. (1978). Speaking of history: oral history in the classroom. Learning, 7, 72-74.

Hatcher, B. A. & Olson, M. (1982). Cultural journalisms: a bridge to the past. Education Digest, 47, 46-48.

Kachaturoff, G. & Greenebaum, F. (1981). Oral history in the social studies classroom. Social Studies, 72, 18-22.

Kazemek, F. E. (1985). Stories of our lives: interviews and oral histories for language development. Journal of Reading, 29, 211-218.

Machart, N. C. (1979). Doing oral history in the elementary grades. Social Education, 43, 479-480.

Macrorie, K. (1980). Searching Writing. Rochelle Park, New Jersey: Hayden Book Company.

Young, A. (1980). Oral history - a popular research technique that can work in music classes. Music Educators Journal, 67, 52-55.

Defining the Functions of Visuals Used to Support Verbal Narration in Audiovisual Presentations

by

FORREST G. WISELY

A desire to improve the visualization abilities of students and the need for a basis on which to conduct research on visual communication were the initial reasons my colleague, Ed Streeter, and I began discussing the concept of the functions visuals perform in supporting verbal narration in audio-visual presentations. It was thought that if a list of functions visuals perform in the communication process was available it could be used to help students focus attention on the selection of the visuals they included in their audio-visual productions. We were also convinced such a list would be useful in some of the research we wanted to conduct on visual communication.

A search of the literature in many fields failed to uncover such a list with specific functions identified and defined. The concept was discussed in a number of sources and some functions were listed, but a comprehensive compilation was not found.

To accomplish our ends it was necessary for us to initiate a three-phase project. Phase one was to compile a list of functions of visuals. Phase two would establish the validity and viability of the listed functions. And phase three would test the utility of the functions in the design communication research. This paper describes the present status of our efforts in this project.

Identifying the Functions of Visuals

An initial list of 24 functions was developed through intuitive speculation, review of the literature, and trial situations with faculty and students. This initial list was then tested and refined to 17 functions. A complete report of this refining process can be found in our article, "Toward Defining the Functions of Visuals Used to Support Verbal Narration," published in *Education Technology* in November 1985.

Responses from readers of the article and from colleagues hearing a paper presented by Wisely at the 1986 Association for Educational Communication and Technology conference in Las Vegas provided information to further refine the list of functions and their definitions. Additional trials and seminars resulted in further refinement. The list presented in Table 1 is the list which we are presently working with on the other phases of the project. Because we have moved ahead does not mean there can be no further changes in the list. It means we have taken it as far as we can for the present without doing other types of work with it.

Table 1 presents 12 functions divided into three categories. The three categories divide the functions into visuals which perform an affective function, visuals which fulfill an understanding function; and visuals whose function is to aid viewers in information processing. These divisions are not intended to imply that visuals serve only one function or that there is no overlap among the functions. A specific visual may fulfill a primary and a secondary function within a given presentation or may serve different functions in different presentations.

Defining the Functions of Visuals Used to Support Verbal Narration

	FUNCTION	DEFINITION	EXAMPLE
AFFECTIVE	Attract Attention	Motivates the viewer to attend to the presentation.	Majestic natural scene. A rabbit in sunglasses by a swimming pool.
	Maintain Continuity or Sustain Attention	Flow of and interest in the presentation is retained.	Cheerleaders shown during a presentation on football rules.
	Generate Emotion	Creates a mood or feeling. Influences an attitude.	Malnourished children in a squalid setting.
UNDERSTANDING	Referent	Illustrates person, place, thing, situation, concept, or event.	The President, an aardvark, open heart surgery techniques, love.
	Simplify	Reduces realism or eliminates unnecessary or confusing detail.	Diagram of an engine. Bar graph of divisions' productivity.
	Elaborate	Presents additional relevant information.	Location of liver in body when discussing its diseases.
	Comparison	Establishes similarities and differences.	Muscle structures of males and females.
INFORMATION PROCESSING	Advance Organizer	Presents purpose, objectives, or main points.	List of key steps in a procedure. Example of a finished product.
	Cue	Emphasizes or signals key information.	A different colored word. Arrow pointing to stamen in a flower.
	Reduce Cognitive Strain	Increases ease of understanding information being presented.	Model of the human lungs. Chart of how to process a work order.
	Summarize	Reviews content of a presentation to assist in retention.	List of major vocabulary words. Flowchart of quality controls.
	Multi-Channel Redundancy	Reproduces information being given orally.	Address and telephone number are shown while being read.

Forrest G. Wisely and C. Edward Streeter Illinois State University

TABLE 1: The Functions of Visuals

Table 1 also provides a definition for each of the 12 functions in the second column and an example or two in column three. These definitions and examples may be further refined as other phases of the project are completed.

Teaching and Using the Functions of Visuals

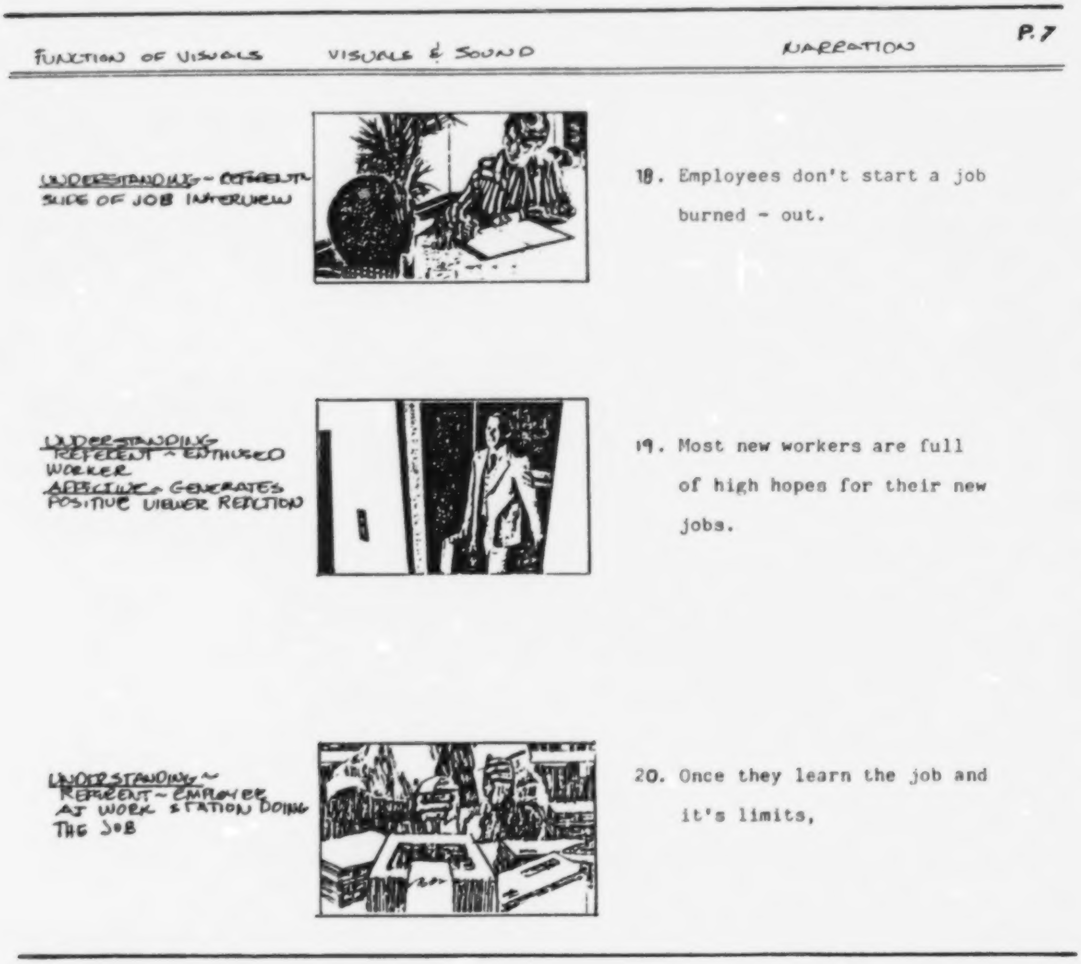
More than 100 students in an undergraduate introductory audio-visual utilization course have been taught and have used these functions in designing their own audio-visual presentations over the past three semesters. The students are first introduced to the concept of functions of visuals using a slide tape program. After the program a handout of Table 1 is given to the students and discussed in detail.

The students are then given the opportunity to use the functions list on a commercially produced sound filmstrip. The soundtrack is presented first. Second both the soundtrack and the filmstrip are presented together. This leads to a general discussion of what visuals add to the presentation. Finally the students are given a print copy of the soundtrack and a response sheet. Using the functions handout, the students then view each frame of the filmstrip, read the narration which accompanies it, and selects the primary function they think the visual is serving in supporting the narration.

After the students have selected a function for each visual in the filmstrip, their responses are then compared to the functions identified by the course instructors. Any disagreements are discussed and resolved or explained. Some exploratory studies have been conducted with data from these presentations. We believe the analyzed data indicates the list is a viable one and students can be taught to use it.

The true test of how well students can use the list is when they begin producing their own presentations. One course project is to produce a two-minute slide tape presentation. The students are taught to identify and organize their subject matter, analyze their audience, state their objective, and write a script before going into production.

This is all standard procedure until they get to the script writing step. We have added a third column to the normal two-column audio-visual script format (Figure 1).



P. 7

FUNCTION OF VISUALS	VISUALS & SOUND	NARRATION
UNDERSTANDING - DIFFERENT SIDE OF JOB INTERVIEW		18. Employees don't start a job burned - out.
UNDERSTANDING- REFERENT ~ ENTHUSED WORKER AFFECTIVE ~ GENERATES POSITIVE VIEWER REACTION		19. Most new workers are full of high hopes for their new jobs.
UNDERSTANDING ~ REFERENT ~ EMPLOYEE AT WORK STATION DOING THE JOB		20. Once they learn the job and it's limits,

Figure 1. Sample Script Page

246

BEST COPY AVAILABLE

The students are first required to write the narration for the production. As they break the narration into segments requiring visuals, they must identify the primary function, the visual is to fulfill in supporting the verbal narration. It is after all this is completed that visuals are either selected or produced for the presentation.

Although no research has been conducted on this part of the project, our observations and those of others feel the student productions in the course have improved since the introduction of this approach. The final presentations in the class may include handouts, charts, overhead transparencies, slide tapes, and video tapes. These are all produced using the functions of visuals list.

Future Plans

We feel we have made a good beginning in defining the functions of visuals used to support verbal narration. Many paths could be followed in developing this project. More sophisticated research to determine the viability and validity of the list needs to be done. A project is currently underway to use the list of functions with an interactive video system as a research tool.

There is also the path which would identify the relationship between visual design elements and the functions. This would be helpful in focusing attention on the design of visuals. Another path involves investigating the variations of visual functions used by teachers and designers for different subjects and audiences.

We are excited and encouraged by the results of our work to this point. There is much work left to be done, but with the rapid development of electronic visualization technology, it is imperative to develop a system for identifying the reasons for using visuals in the communication process. We invite all comments and participation in this project.

Bibliography

Anderson, R. H. (1983). *Selecting and developing media for instruction* (2nd ED.). New York: American Society for Training and Development.

Beck, C. R. (1984). Visual cueing strategies: pictorial, textual, and combinational effects. *Educational communication and technology journal*, 32, 207-216.

Brody, P. J. (1984). In search of instructional utility: a function-based approach to pictorial research. *Instructional science*, 13, 47-61.

Brody, P. J. (1984). Research on pictures in instructional texts. *Educational communication and technology journal*, 29, 93-100.

Dwyer, F. M. (1972). *A guide for improving visualized instruction* , State College, PA: Learning Services.

Dwyer, F. M. (1978). *Strategies for improving visual instruction.* State College, PA: Learning Services.

Knowlton, J. Q. (1966). On the definition of pictures. *Audio-Visual communication review* 14, 157-184

Levie, W. H. , & Lentz, R. (1982). The effects of text illustration: a review of research. *Educational communication and technology journal*, 30, 195-234.

Wisely, F. G. , & Streeter, C. E. (1985). Toward defining the function of visuals used to support a verbal narration. *Educational technology*, 25, 24-26.

Reading the Visual Text: Dancing to the Music

by

ROBERT MUFFOLETTO

Watching television, reading a book, talking to a friend, all involve some "sort" of communication, some "sort" of exchange. Reading a book involves not only a reader, but a text and it's author. Communication between an author and a reader requires an initial agreement that there is something being produced to be read. To produce something requires that the author has at some point internalized forms of representation or language. To say "something" is to re-present it. To interpret that "something", readers must "have a sense... of what one is reading towards" (Norris, 1982, p. 5). Interpretation says Christopher Norris "is a quest for order... among the manifold possible patterns of sense which the text holds out to a... reader (Norris, 1982, p. 5).

Watching television, evolves not only making sense out of what is seen and heard, but the production or construction of that experience. Images, books and other forms of discourse, involve the construction or encoding of experience by authors or producers for readers. The form this experience takes is called a text. Texts are "socially constructed artifacts which are encoded with the intentions of their makers and as such, can be read as one would read a text to ascertain meaning, to decode intentions." (Becker, 1986, p.41) Meaning and texts, involve an encoding process to express some intent. For the reader of texts, the process of reading involves the decoding or the recognition of the codes used to create the experienced text. The process of encoding and decoding demands the participation of producers and readers. How meaning is determined and where it is located in this process is a question of perception and power. Is the meaning of a spoken, written or visual text to be found in the producer-text relationship or in the reader-text relationship? Whichever the case, the location of meaning positions readers and producers in different relationships to others and to other texts.

In considering those questions I will refer to two theories, intentionalism and reception or reader-response theory. Located within both theories are ideologies that position individuals as subjects in relationship to the material of their existence (Belsey, 1980).

Intentionalism and Reception theory

"Intentionalism suggests that meaning is placed in the text by a producer and must be discovered by a reader. Meaning from this perspective is something that exist independent from the reader, and is independent of external factors... In a visual text as well as a written one, meaning is depicted as something that may be obvious or hidden... From an intentionalist perspective, it is the job of the viewer or reader to discover what the artist or creator meant or said. Truth and value from this point of view exist within the (intended) text." (Muffoletto, 1986, p.4) The text and its meaning, in the intentionalist model, is defined for its reader. The reader's role in this model is to discover the meaning of the text; to see the text not as a constructed experience but as a window to the world. The role of the producer is to encode texts in a manner that do not reveal their devices. Texts become familiar, they become objects and not representations (Eagleton, 1984).

Reception theory, also known as reader-response theory, localizes meaning in the space between the reader and the experienced text. Meaning in this model is "something" created by the reader in the process of responding to a text. Reception theory shifts attention away from a "concern with production and presentation to a concentration on effect and response." (Holub, 1984, p.11) The text, from this perspective, is to be experienced, not defined (Holub, 1984). In respect to intentionalism, meaning has shifted away from the producer-text relationship, to one concerning the reader and the experienced text. (The term "experienced" suggest that there is no one experience or meaning of the text.) For each reader there will be a different textual experience. Meaning then, within this model, is dependent upon readers and texts, their histories and conflicts. Because of a reader's history with other texts, the meaning of any text changes in time. Put simply, in returning to re-read a text, a different text is experienced because of prior experience with that and other texts. It is because of the reader's history with other texts that the text is, after all, recognized as a text.

As discussed above, intentionalism is concerned with the producer-text relationship, locating meaning in the text as an "object to be defined" not as something to be experienced. Reception theory, sees the relationship between the text and the reader as producing an "effect to be experienced... The focus is switched from the text as object to the act of reading as process." (Holub, 1984, p.83-84)

This is not to dismiss the production process of authors and the resulting text. It is through an indepth analysis of the encoding process that the nature of the text is revealed. The tive process, moves away from an
object to be defined to one that is constructed. Meaning from this textual analysis lies not in the text but in the ordering and presentation of an established set of codes. Authors, as well as readers, exist and draw upon existing codes within their own horizons. To understand the nature of meaning the text can not be viewed as a window to the world or as an object to defined. The text must be understood as being both produced and received effects. It is through an analysis of the encoding process of what produces the effect (the text), which leads to a better understanding of the decoding process, the reader's response. From a point of analysis, that becomes the researcher's text.

To encode and to decode a text refers to a system of signs or representations. A model for the study of this encoding and decoding process is semiotics. Semiotics "is concerned... with how meaning is generated in "texts". It deals with what signs are and how they function." (Berger, 1982, p.14) Signs, as material things, stand in place of other things; signs re-present (Muffoletto, 1984). A sign within the semiotic model is formed through the association of a signifier and a signified. A signifier is material, a signified is non-material or conceptual. A sign then is the result of the association formed between material and concept, between signifier and signified. This association _is_ what a sign _is_, what _it_ means and what _it_ stands in place of. What a sign means, how material is associated with non-material, is social and historical. Meaning is social in that the association is formed by social agreements within communities, or what Stanley Fish refers to as "interpretive communities" (Fish, 1980). The meaning of a sign is formed out of a social agreement that "this means that", and what this means is understood within a certain historical moment. That is why material can acquire different meanings over time and in different social communities. Meaning is dialectical and historical (Habermas, 1968). How a text effects producers and readers is understood by its placement within time and space, within history and social conditions (Balsey, 1980).

A code is a system of signs. Signs as apart of a system acquire significance by its placement within that system of representation. How individuals and groups dress, symbolize rituals, create works of art, communicate, and give meaning to what they do is based upon a codification, or system of signs. "To be socialized and be given a culture means", says Arthur Berger, "to be taught a number of codes, most of which are quite specific to a person's social class, geographical location, (and) ethnic group..." (Berger, 1982, p.34) There are many examples of codes or sign systems available to refer to; the most obvious would include written, spoken and visual languages (Becker, 1986). A code, as a system of re-presentations, is as individual signs are, socially and historically constructed. For signs to refer to anything at all they must be part of an already existing code.

Through the utilization of codes, producers encode intention into texts. In the production of text, producers of messages expect the readers of their text to re-produce their intended meaning (Hall, 1980). Consider for a moment instructional programs, AAA trip books, advertisements, political messages, entertainment, kisses and hugs, and dancing. In all forms of social interaction, producers of texts, as members of social interpretive communities draw from existing codes to construct or communicate meaning (Fish, 1980). Dancing provides us with a good example. Through the selection and organization of gestures, the dancer attempts to communicate an intended meaning to the gaze of some onlooker, through the dance. The dance, as a text to be read, has from the dancer's perspective an intended or encoded meaning. From the intentionalist perspective, it is the role of the gazer to reproduce that intended meaning, to get the message. If this does not occur, the producer will reconstruct the text in an attempt to re-deliver the message; the dance will change. From the receptionist position, the meaning of the dance is produced between the dance as a text and its reader. The dance will remain the same, but the text will change.

For the movements of dancers, dancing to "rock and roll" music, to mean or infer anything at all to the dancer and to the gazing onlooker's, they must already be part of an existing social code, and understood as such. The meaning of a dance, from an intentionalist position would be located in the dance text, and not in the space between the viewer and the dance. From the dancer's perspective the dance is being created to express a message. From the on-lookers position, what is being seen must first be recognized as dance, as a social text, to be read as meaningful. The intentionalist would say that there is no dance until one is made. The receptionist would say that there is no dance until I say there is. The researcher would say that you have to have music to dance.

SUMMARY

In summary, it is important to consider in the analysis of any text, where one stands in relationship to that text, its producers and readers. From an intentionalist perspective, meaning must reside within (the intent of) the text, with the text's signification already defined. From a reader-response position the meaning of any text is found in the relationship between "it" and its readers. In both cases, the authority of the reader, the producer and the text is defined by the position taken. As educators, artist, researchers, lovers, and seducers, we are not only the producers of texts but are also the consumers of them.

REFERENCES

Becker, A. A Teaching Model for the Grammar of Television, *Journal of Visual Verbal Languaging.* Vol.6, No.1, Spring 1986, pp.41-48.

Balsey, C. *Critical Practice.* New York: Methuen, 1980.

Berger, A. *Media Analysis Techniques.* Beverly Hills: Sage Publications, 1982.

Eagleton, T. *The Function of Criticism: From the Spectator To Post-Structuralism.* London: Verso Editions and NLB, 1984.

Fish, S. *Is There A Text In This Class?: the Authority of Interpretive Communities.* Cambridge: Harvard University Press, 1980.

Habermas, J. *Knowledge and Human Interest.* Boston: Beacon Press, 1968.

Hall, S., Hobson, Lowe & Willis, eds. "Encoding/decoding" in *Culture, Media,Language.* London: Center for Contemporary Cultural Studies, 1980.

Holub, R. *Reception Theory: A Critical Introduction.* London: Methuen, 1984.

Muffoletto, R. *Towards A Critical Pedagogy of Media Education.* Unpublished doctoral dissertation, University of Wisconsin at Madison, 1984.

Muffoletto, R. "Critical Viewing-Critical Thinking: Reading the Visual Text." unpub. manuscript, California Art Education Conference, Fresno, Ca., October, 1986.

Norris, C. *Deconstruction: Theory and Practice.* London: Methuen, 1982.

Seeing Is:
Understanding and Remembering

by

JEANNIE HARMS

Based on learning theory and communication research, visual materials can provide the means whereby learning may become more effective and efficient. This article focuses on ten specific applications for the teacher/trainer to consider in translating content into visual material. Examples of visualized subject matter developed by the University of Wisconsin-Eau Claire Media Development Center will be utilized to illustrate several applications. The intent of this paper is to demonstrate how learning may be made more effective and efficient through the use of visual aids, specifically slide and overhead transparencies.

Aristotle once stated; "Nihil est in intellectu, quod non prius fuit in sensu". The translation of this phrase is simply; "There is nothing in the mind which was not first in the senses". We learn through our senses and this learning imprints a mental image which leads to understanding.

MOTIVATION

The use of visual materials shows that studied care and artistry has been put into a particular presentation. Incorporating visuals in an educational presentation heightens a learner's motivation for learning. Motivation is one of the most essential elements in instruction. Visual materials that are well executed will heighten motivation. Paul LeRoux stated, "If you choose not to use visuals for a presentation you'd better have three aces: a short message, stimulating content and a very lively delivery style." (LeRoux, 1984)

RETENTION

Visual materials also serve as a significant aid to retention. Are you interested in retention? "Research indicates that retention of main points improves significantly when visual outlines are presented." (Heinich, Mollenda, Russell, 1982) Visual outlines are not considered actual visualization by media specialists. They are simply words on a screen. However, they do require the learner to both see and hear what the instructor desires. They serve to reinforce what is important in the lecture. They provide continuity and organization. In short they do serve an important function and many instructors would be wise to consider the use of outlines in either overhead or handout form, particularly when retention is critical.

"Visualization is one of the most powerful tools of memory." (Begley, Springen, Katz, Hager, Jones, 1986) If we refer to the CONE OF LEARNING developed by Edgar Dale we see that we remember progressively more as we are more fully involved in the learning process. (Dale, 1969) Dale's work makes a convincing argument for the use of visualization as support for a lecture. We must not make the mistake of believing that we must ALWAYS use visuals in the teaching process. The point is that visual support for a learning system is good if it causes learning to happen - bad, or unnecessary if it doesn't. Asking what visuals are best is, as Broadwell suggests, just like asking what tool is best. (Laird, 1978) There are many excellent resources to help the instructor decide how to select a medium for their message. The essential steps include:

1. Establish precise objectives
2. Analyze the content and the audience
3. Define the learning environment
4. Select the methods which will produce the new behaviors
5. Identify the communication strategies
6. Select the media
7. Design and approve the artwork
8. Secure the equipment
9. Field test the program, revise and conduct (Laird, 1978)

It is important to follow the process outlined above in order to know exactly what it is you want to accomplish with the visualization process.

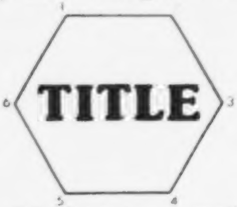
APPLICATION

If one does decide to support instruction with visuals there are numerous application possibilities. Following is a list of ten applications. The list is not exhaustive and is limited only for the purpose of this paper. The appropriate use of visuals can provide:

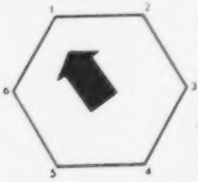
- Order and continuity of thought
- Opportunities for participation
- Meaningful associations
- Change of pace, freshness, activity
- Concise delivery of complex or lengthy information
- Consistency of instruction
- Comparisons and contrasts
- Experiences not otherwise possible
- Alternate methods of learning
- Individualized instruction (Heinich)

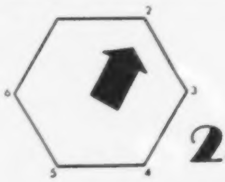
Order and Continuity of Thought

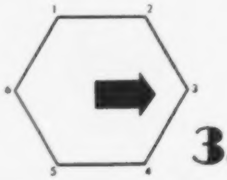
The first application cited is order and continuity of thought. The visual outlines already mentioned above fall into this category. However, it is possible to provide order and continuity in a truly visual way by means of the repetition of symbols. It is possible to show a very large diagrahm or chart which is too complicated to understand and then divide the chart into small portions which are both easy to explain and to understand. The small sections should relate back to the whole by symbol to give order and continuity. For example, suppose you have as a resource a hexagon with a large title in the center and information (parts of the whole) in each corner of the hexagon. Order and continuity could be provided for a lecture by first discussing the general concept with an overhead that has been simplified to include only the hexagon and the title.



The supporting visuals would focus on each of the six subsections individually. Order would be provided by numbering the sections and continuity would be achieved by repeating a reduced symbol of the first visual (minus the title) on each of the six transparencies. An arrow could point to the corner under discussion.


1.


2.


3.

Clarity and order are essential factors in effective understanding. "The better organized or patterned a message is perceived to be the more information we can receive (and process) at one time." (Heinich) Visual materials can be especially beneficial in this regard.

Active Participation

Visual materials can also encourage active participation. The activity must be carefully matched with the objectives. Participation allows the learners to make immediate use of the learning as they apply it in meaningful ways to new situations and unexpected events.

Dr. Roma Hoff, is a member of the UWEC Foriegn Language department, and recipient of the Distingushed Foriegn Language Educators of Wisconsin, 1985 Award. Dr. Hoff teaches Spanish. She firmly believes in and practices the use of "Realia" to teach. "Realia" has been defined as, "Secondary devices for triggering oral expression". (Carter, 1974) Realia are visual devices chosen for eliciting a response from the learner. Dr. Hoff maintains a sizeable, constantly updated collection of pictures and slides. She opens a semester of beginning Spanish by showing students pictures of famous, current people and attaches adjectives in the present tense. She uses pictures of famous people who are dead to explain the past tense. Pictures of pairs, such as Charlie and Di elicit conversations in the plural. The focus is active involvement in narration and description.

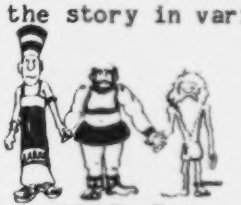
Meaningful Associations

Third on the list of applications is the use of meaningful associations. This concept is a time tested teaching practice, of starting with what the learner understands and relating the new information to it. Dr. Edward Pond, Professor of History at UWEC provides a visual world of history for our students. We have all heard of the pyramids in Egypt but few of us have seen them. Dr. Pond developed two slides to provide for meaningful association. He brought the largest of the pyramids, Cheops, to the Eau Claire campus by having a slide developed that superimposed the actual dimensions of Cheops over an aerial view of the campus. This slide focused on the area covered by the base dimensions of Cheops. A second slide to indicate the height was developed by superimposing the pyramid on campus against a cliff that rises from the Chippewa Valley River floor. The height of the cliff is 92'. Cheops towers above the cliff as it rises 480' into the sky. The students in Dr. Pond's classes have a more complete understanding of the immensity of these structures because they can associate the size of Cheops with a campus with which they are familiar.

Endel Tulving emphasized the importance of meaningful association in retention when he stated "understanding the subject and relating it to something you know makes for powerful memory". (Begley)

Change of Pace, Freshness and Activity

Certainly one of the most effective ways to heighten the motivation of learners is to provide them with experiences that are fresh, exhilarating, new and varied. Freshness and variety are numbered among the most important contributions that visual materials can make to teaching. Monotony can be a powerful deterrent to learning. Dr. Ronald Schlattman, Professor of Business Education and Administrative Management at UWEC has been rated among the top five faculty for the years of 1984-85 and 1985-86. His success is based upon his thorough preparation as an instructor and in part due to the levity and freshness he provides in his lectures through humor. He utilizes overhead transparencies on a regular basis. The Media Development Center capitalized on his good sense of humor and developed an entire set of transparencies for a relatively straightforward lecture based upon a humorous story. The roles of administrator, manager and employee became the characters in the story and all of the information to be taught was tied to the story in various humorous, visual ways.



"The Gang"

Concise Delivery of Complex or Lengthy Information

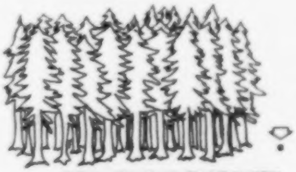
Visual materials are particularly useful in presenting complex or length information. The UWEC Media Development Center has developed many slides and overheads that allow for the concise delivery of complex information. Most are so complicated it is difficult to describe them without going into a lengthy discussion. It is sufficient here to say that one of the most commonly used solutions to disseminate complex information is by means of an overhead transparency with overlays.

Consistency of Instruction

The care and planning that are required to create a successful set of visuals for the classroom usually result in an excellent instructional product. This product can be reused, or shared within a department for consistency in instruction.

Comparisons and Contrasts

This is an application that allows the instructor to relate a concept that is hard to "see" unless a visual comparison is made. Dr. William Mitchell is a Professor of Business Education and Administrative Management, a former department chair, and active consultant to companies such as Northwestern National Life. Dr. Mitchell frequently utlilzes comparison and contrast to make the ever expanding world of computer knowledge understandable to his students. For example, a recent overhead transparency compared a forest of 27 trees to one 12 inch double sided optical disk. The information showed that it takes the paper from the pulp of 27 trees to hold the information that can be contained on one 12 inch disk, or 1,000,000 sheets of paper = one 12 inch disk.



Experiences Not Otherwise Possible

The UWEC Department of Education has utilized video tapes of three of Wisconsin's most outstanding secondary teachers to show secondary education students the methods of teaching critical thinking. The lecture method can not begin to compare to the learning that can be derived from actually seeing and hearing these outstanding teachers in the classroom via video.

Alternate Methods Of Learning

Researchers have identified numerous learning styles. Two important learning styles are Verbal and Visual. Most learners have a dominant learning style. The typical school usually emphasizes verbal instruction. A recent study by the Department of Instruction of the State of Oklahoma found that there is a 9 point improvement in learning when the learner is taught in their dominant learning syle and reinforced in their secondary learning style. (Duffy, 1986) This finding supports the concept of visualizing material as a very necessary aid to learning. A systematic use of varied visual materials can make the subject matter clear and appealing to students with:

- Different learning styles
- Different backgrounds
- Varied Abilities

Individualized Instruction

The UWEC Department of Geography has developed an entire course on slide tapes and workbooks. Students have assignments to complete following the viewing of each tape and the classroom lecture is a discussion based on the assignments. Students are allowed to view these slide tapes at their convenience in the geography laboratory.

CONCLUSION

This article was developed to persuade instructors to give serious consideration to the value of visual support for instruction. Learning theory and communication research indicate that learning may be made more effective and efficient through the use of visual aids when these visuals are developed to meet specific objectives. The list of ten applications may be clipped and kept at hand as a ready reminder of the possible applications open to an instructor in preparation for instruction.

REFERENCES

Begley, S., Springen, Katz, S., Hager, M., Jones, E. Memory. Newsweek, September 29, 1986.

Carter, Thomas P. The Imaginative Use of Projected Visuals. Foriegn Language Annals. March, 1974.

Dale, Edgar. Audiovisual Methods In Teaching. Holt, Rinehart and Winston, 1969.

Duffy, Barbara. IVLA Conference, 1986. Madison, Wisconsin.

Heinich, Mollenda and Russell. Instructional Media and the New Technology of Instruction. New York: Wiley and Sons, 1982.

Laird, P. Approaches to Training and Development. Reading, Ma: Addison-Wesley, 1978.

LeRoux, Paul. Selling to a Group. Harper and Row, 1984.

Visual Literacy in Ancient and Modern Man (Part One)

by

HILLEL A. SCHILLER

Acceleration of science and technology in the last century has been astounding. However, relative change in education to improve learning, particularly as measured by more and better high school graduates, has not accelerated; indeed, it has become regressive, at least in many large urban areas.

Of course, no one today thinks of education as a science, though many still claim it is an art. Dewey (1) suggested that it over-arched science in that it had to evaluate scientific knowledge in order to select what could be useful to advance itself. But what sciences has education been drawing its heuristics from? It uses "facts" and techniques drawn from psychology, social science, information theory, communication theory and even management "science." In the last 30 years or so education has been on a technology binge, first with the enthronement of the "teaching machine." Now, the computer is the rage and the practical, but still too expensive word-processor bids to solve many problems. In between these, time was taken out for behavior modification and space devoted to the open classroom. Today, also, Mastery Learning still fights the good battle.

But what about the future -- and the functioning illiterates who continue to be added to the already 20,000,000 strong who have filtered through the system? I say give another science a chance. I am pinpointing Anthropology with all its branches -- the science that chooses to examine the whole person in a society as well as its groups. Anthropology's enormous body of psycho-social archives and current research focus precisely upon information and principles that are of crucial value to the visual literacy perspective.

The themes and practices espoused by visual literacy can be used to unify educational purpose. They can assist particularly in reinforcing the claim to educate the whole person; though this seems too much for those clamoring for the "back to basics" approach. But the real basics are still up for grabs in my estimation. Educators for a long time have accepted narrow thinking about learning derived from the limited perspectives of certain schools of psychology. The restricted conceptions of behaviorism and the overly analytic approach of some cognitive psychologists have diverted real progress.

Until teachers and their administrators understand the rich and deep nature of *the symbol* in all its forms and uses, aiding the whole person to contend with our complex society cannot succeed. For our dependence on the symbol to comprehend, command, inspire, deceive and to facilitate or distort behavior is central to being visually literate. But to comprehend the many roles the symbol plays in communication encompasses not only the use of *words*, but also the use of *images* and *rituals* -- and all as *contexts for each other*.

Study of the human abstractive processes are basic to this knowledge. Awareness of the processes and results of human abstraction and projection offer the only way to understand better the continuums of reality about which judgments must be made and action must be taken. In the long evolution of this abstractive process in man, a noticeable shift in gears and acceleration took place at specific times in social history. The anthropological sciences -- archeology, ethnology, linguistics, etc. -- are the only set of sciences that have tracked this shift intellectual gears at fundamental levels. This began for early man perhaps some 200,00 years ago and for modern man some 40,000 to 34,000 or so years ago. Anthropologists continue to search through our past documenting early artifacts and speculating about human behaviors. They search, too, with sociologists, among today's surviving primitives and moderns for human habits and patterns that may be judged significant to continued survival or ultimate self-destruction.

The shift in our perceptual gears from dependence upon direct, accurate and insightful vision for sustenance, protection and safety in a hostile environment, to dependence upon indirect, abstract symbolic comprehension in a less naturally hostile, but far more complex environment must now be altered. We must recapture for people the early salient strengths of observation, social invention and esthetic response that an evolving visual literacy brought to ancient mankind. This does not imply going back to primitive standards or beliefs so much as regrasping a clarity of perception, comprehension and expression that a visually literate responsible, modern society can achieve.

There have been many definitions of visual literacy in the short 18 year history of the association. In examining briefly some of these definitions, I hope to focus on the nature of visual literacy in two ways: first, by moving the definition further in the "generic" direction it has been tending and second, by demonstrating that the crucial processes underlying it existed and even were dominant in man's earliest recorded history. I believe that this evidence will take this eclectic discipline out of the realm of being considered just another fad. I will maintain that the achievement of visual literacy is the most salient *basic skill*, if a complex one, for all learners to master.

It is time for visual literacy to be placed in a coherent historical setting. Done cogently, it will demand for visual literacy a primary role in education. To do this now is necessary because there has not been established a strong sense of where visual literacy began, nor a sense of the path it has traced in the development of mind.

Though the concept was introduced in the late '60's by Jack Debes and Roger Fransecky and further enriched by Clarence Williams, what is most important for its continued advancement is no longer merely important for its continued advancement is no longer merely proselyting the "idea" but a careful delineation of the processes underlying its evolution and the principles unifying the practices embodying it medium by medium. We can no longer tolerate jargon, loose terminology, and fragmented thinking about it. What its processes actually are and how it has worked and is still working for learning and teaching are now its most significant aspects to explore. Thus, there is a synthesis needed dealing with *what is most worth knowing* about visual literacy.

But this is no easy task as some of the definitions and theoretical approaches will demonstrate. *How* can we connect the processes producing visual literacy at the deepest level with the educator's concern for teaching more effectively? *How* can we raise it above of seeming to be mere media hype? This can be done by synthesizing a basic position and showing conclusively that visual literacy has a fundamental connection to all inventive and imaginative thinking.

There is such a thing as *visual memory*. There is such a thing as *visual thinking* or *visual intelligence*. There is such a thing as *visual expression*. The first is an innate capacity. The second is a human developmental process; and the third is the complex result of the human civilizing experience. Together with verbal conceptualization, these *basics* can be blended ultimately to make a superior teaching process and superior learners and teachers.

Ancient man was highly visually literate. The development of this complex perceptual/expressive capacity took millenia to evolve under the influence of a highly stimulating environment and a highly active imagination that combined to produce forms and patterns for interior and exterior manipulation. Early man's naming everything in sight that could be useful, dangerous, beautiful or a controlling influence necessitated an intense form of pre-scientific classification, impossible without careful visual identification of properties and qualities. Visual thinking, learning and intelligence is far older than what happened in the caves of Altimira and the more than 200 other caves found with human artifacts in them.

Human reaction to *natural imageries* (forms in nature) and *constructed imageries* (invented and esthetic forms) and, ultimately the creation of a multitude of symbolic systems to deal with the complexities of living in a well-lighted technologically oriented world has always demanded high levels of visual literacy. Yet, today the traditional oveemphasis on learning verbally has smothered the effective understanding and use of *visual knowledge*. Educators must be helped to rediscover it. It must be made clear now in an integrative or synthesizing way on what this profound conception -- visual literacy -- rests.

Definitions and Theorizing

Visual literacy is no longer a "great dim shape" (2) but a great, bright process with roots in the dim caves of antiquity. But it is extremely difficult to describe a concept that is primarily non-verbal with words. The developers of Project VUE (3), for example, an elementary school visual literacy project, suggest that for them a working definition was the visual literacy is a field of study, a process and a synonym for "visual languaging abilities." They observe further that "visual literacy changes as more experience and sophistication are developed." Thus we will find in the discussion that follows that all boundaries will not be firm or distinct.

For this paper there are too many definitions for all to be analyzed individually. They can be arranged into clusters dependent upon the disciplines of their originators. Two major clusters are those definitions devised by theoreticians and those by practioners. The theoretician's analytic method press the trend of defining toward "genericism" and the practitioners underscore the holistic success of the visual literacy techniques they use.

There is another distinction that must be made: that of the difference between a description and a definition. Descriptions are wordier than definitions. They attempt to be complete rather than merely define. Definitions, on the otherhand, presume precision, clarity and succinctness, hoping to capture the intrinsic nature of the process. The earliest discussions about, or definitions of visual literacy in the late 60's and and early 70's were essentially descriptions.

For example, Debes' and Williams' original specification:

> Visual Literacy refers to a group of vision competencies a human can develop by seeing at the same time as he has and integrates other sensory experiences. The development of these competencies is fundamental to normal human learning. When developed, they enable a visually literate person to discriminate and interpret the visible actions objects, and/or symbols, natural or man-made, that he encounters in his environment. Through the creative use of these competencies, he is able to communicate with others. Through the appreciative use of these competencies he is able to comprehend and enjoy the masterworks of visual communication. (3a)

What is unfortunate about this first description is its wordiness in the attempt to "explain" visual literacy. This resulted in a complexity that even the aficionado found hard to decipher, much less the layman teacher. In addition, the key word "competencies," presumably borrowed from Chomsky's linguistic paradigm borders on jargon, and is nowhere defined. Also the words "creative" and "appreciative" are not defined in any concrete way enough for their meanings to be clear. Taking the time to penetrate this description, one can find that it does encompass an accurate delineation of the two-fold processes of input and output --being trained in criteria for judging visual experiences, and being trained to express oneself using visualizations.

Because of dissatisfaction with this initial attempt to be as complete as possible, many theoreticians advanced their own definitions. Another early description published in 1973 is important because it appeared in Donis Dondis' excellent book *A Primer of Visual Literacy*. It is idealistic, philosophical and difficult to fathom. In it she attempts to capture the universalizing esthetic response which would inform individuals sensitized to the infinite scope of human understanding.

> Visual literacy implies understanding, the means for seeing and sharing meaning with some level of predictable universality. To accomplish this requires reaching beyond the innate visual powers of the human organism, reaching beyond the intuitive capabilities programmed into us for making visual decisions on a more or less common basis, and reaching beyond personal preference and individual taste. (4)

This is a large order and goes far beyond what is called for in most definitions of visual literacy. The "universality" Dondis calls for is *insight* which is both subjective and objective because of its esthetic base. Achieving such insights, of course, is the highest goal of education.

Moving on now into the early 80's we come across John Hortin's definition in which we see the trend toward conciseness clearly demonstrated.

> Visual literacy is the ability to understand the use of images, including the ability to think, learn and express oneself in terms of images. (5)

I admire Hortin's definition and perhaps one couldn't ask for a better model. But I think the problem it faces is the meaning and interpretation of "images." There is still a problem to broaden its sense to include more than the mere "pictorial;" in order to account for in a parallel way the registering in memory the forms of the other sensory impressions.

In 1984 Jack Debes attempted to update his "definition" of visual literacy in the following way as:

> ...obtaining information through relative simple use of *language* in particular medium types, 2) A more skillful analyzing and thinking of the information and the form and purposes of communication, and 3) considering the consequences of the communication for self, for situation, and for society. (6)

This attempt at achieving conciseness fails because of its too close dependence upon the analogy to Language evident in the use of the term "languaging" -- an abstraction, I believe, that fails to deliver a precise meaning for the skillful use of visualizing media. In addition, the third point in the definition, an enormous "request" for today's teachers and learners, calls for a kind of deep contextualization of experience which only a truly integrated person could achieve and then only on the basis of a truly unified theory.

Bringing conciseness to almost a fault we have Richard Sinatra's latest definition:

> Visual literacy itself is defined as the active reconstruction of past visual experience with incoming visual information to obtain meaning. (7)

Admirable as it is for its brevity, it leaves as a great mystery the process of "reconstruction of past visual experiences." It is admirable, too, for its emphasis on the centrality of meaning; but its lack in identifying the dual nature of meaning as encompassing the intuitive and the conceptual weakens its impact and makes it almost anti-climactic.

In the most up-to-date definition of visual literacy we find David Considine struggling with the complicated concept. He tries to be inclusive and so conciseness suffers, but he does retain the conception that visual literacy attempts to account for both an input and output set of processes.

> Visual literacy refers to the ability to comprehend and create images in a variety of media in order to communicate more effectively...broader in scope than are critical viewing skills -- the ability to analyze, understand, and appreciate visual messages...visual literacy contains the competencies of reading and writing. Visually literate students should be able to produce and interpret visual messages. (8)

We cannot fault the layman teacher for being confused by these diverse definitions which attempt to be comprehensive, but are so, paradoxically, in a limited way. We can become aware of this limitation only as we peruse the definitions offered by other theoreticians, whose interest in other media than "print" or the graphic evoke a deeper need for the definition. It is they who began the convergence of principles that have led to the "genericising" of the idea of visual literacy. For example, Anderson defines his phrase "media literacy" as

> ...the skillful collection, interpretation, testing and application of information regardless of medium or presentation for some useful purposeful action. (9)

Michael Streibel's insightful article (10) relates the development of visual literacy definitions to the newest "literacies" have parallels and how they overlap, and he calls for their synthesis. However, he carefully delineates the visual literacy components of computer literacy as having to deal with 1) understanding and using computational visual images, and 2) analyzing and thinking about visual computation media.

All of these viewpoints serve to show an important fact about visual literacy -- every visual medium has its own characteristic form; and so there are clearly VISUAL LITERACIES. Among these literacies there are different skills to be learned in terms of their characteristic techniques and methods of expression.

Perhaps this state of affairs suggests the impossibility of achieving a synthesis of principles. But this does not disturb Streibel, who writes, "...Just as our notion of literacy in the past took many generations to incorporate universal reading and writing, so again our notion of literacy, in the future will expand to incorporate visual literacy, television literacy and computer literacy. (11)

The idea that each medium has its own characteristic form does not mitigate against the arrival at a synthesized set of principles unifying basic thinking about the nature of visual literacy.

The problem to be solved about defining visual literacy is that it is a two-pronged process. At its initiation it is an input process and at its other end as expression it is an output process. In between is what was once called the "black box" the invisible complexity of organizing processes that assimilate facts, feelings and ideas, store them and then "accommodate" via imagination, as Piaget would have it. The central process that works to create some kind of form or order at either end (informing and performing) is the extraordinary human process called abstraction which operates ingestively and expressively in turn. Abstracting both perceptually and expressively are essentially sensory based processes, which are intuitive until supplemented by conceptual needs such as exist in the combining art forms. Yet, it is my contention that the same principles of communication exist governing the criteria for all media.

Let us pass now from definition to the theorizing about visual literacy. Fork and Jonassen in surveying research on visual literacy discuss the eclecticness of visual literacy theorizing. They call for "...the construction of a unified theory, or metatheory...in order to provide the theoretical framework necessary for generating and interpreting needed research." (12) However, they go on to say

> Such a metatheory would no doubt constitute a hybrid of the most relevant extent of definitions and related theories. The amalgamation of these and other features found in theories of cognition, perception and instruction would hopefully contribute to the development of a model that could being to explain some of the complex processes involved in explaining visual literacy and predicting visual thinking behavior. (12)

Fork and Jonassen go on to suggest the disciplines which could contribute to their "hybrid" unification listing facts drawn from information processing, theories of visual perception, psycholinguistics and semantics, from Gestalt psychology and Art, and from a category they call "...individual differences and the literature concerning past experience." (12) And though they admit that the derivation of a theory or metatheory of visual literacy from the diversified combination of theories is a "formidable task," they offer no clues as to unifying principles.

My sense of it is that a true paradigmatic synthesis, though it would include information and principles derived from diverse sources and insights cannot be "hybrid" or an "amalgamation." It must be a true compound -- having its own characteristic form. Any ramification of the definition of visual literacy would be an analysis of a integrative process effectively put to use by the individual considered to be visually literate. Another bias of their viewpoint is the suggestion that it would be desirable to be able to "predict visual thinking behavior." Though one would wish to be able to predict that someone would choose to visualize a concept rather than talk about it, I cannot see anyone could expect a visualizer to be able to predict exactly what his or her image would be like until the act of expression is completed.

A fruitful winnowing was begun by Hortin. (5) He has observed that "Almost all the major ideas and concepts of visual literacy can be traced to four areas of study: linguistics, art, psychology, and philosophy." We can simply ask to which of these is the visual most important in terms of its fundamental concerns. I think there is only one answer -- art. It becomes significant then that the first thorough book delineating broadly and deeply all the aspects of visual literacy was done by an esthetician and practicing teacher of art. I am of course referring to Dondis' volume, A Primer of Visual Literacy.

Another early proponent of visual literacy also revealed his deep sense of the level of comprehension necessary for any visual literalist or practitioner in any visualizing medium. Tony Hodgkinson wrote:

> ...Films and television share with painting most of its esthetic attributes, which, as Eisenstein and others have emphasized, deserve careful study by film students... (17)

So we meet now with a cluster of definers who see the validity of a paradigm springing from the intuitive area of esthetics. The call for research in visual literacy is certainly appropriate, but what is crucial for discovering the knowledge most worth knowing about visual literacy is the nature of the paradigm in which the research is done. A truly effective or fruitful paradigm as guide does have to represent a fundamental philosophical position that is comfortable for most thinkers and practitioners in the field. As the above discussion indicates, this does not yet formally exist for visual literacy...except there does seem to be one coherent emerging area.

It is in the area of esthetic education that a set of synthesized principles unifying the historical validity and the efficacy of visual literacy in learning and teaching can create a more simplified and integrative paradigm. It perhaps can become a compound of facts and principles derived from an integration of developmental learning (18) perceptual learning (19, 20, 21, 22) and esthetic principles (4) that could inform and provide the fundamental level for a synthesis of effect underlying all the characteristic forms of visualizing media.

What we may discover is that visual literacy is a special yet broadened case of esthetic education. That esthetic principles underlie all non-verbal imageries -- which include the "combining" arts, where verbal and non-verbal contexts are integral to their characteristic forms: drama, opera, cinema, television, video, and even advertising -- brook little disagreement. The close relation of visual literacy to esthetic education was carefully delineated by Blanche Rubin (13). In this thoughtful article she distinguishes between the emphases given by each field, showing that though both fields stress the end goals of enhanced visual understanding, appreciation, and the development of the creative spirit, visual literacy has tended to press the development of photographic, film and video techniques to the detriment of traditional materials, as well as burying and losing sight of the above goals.

I believe a definition of visual literacy can present a generic viewpoint only if it springs form an esthetically oriented paradigm. Only from this perspective will it be able to encompass all symbolic communication that is expressed iconically and enactically. The real synthesis, I believe, will arise from principles combining an understanding of the knowledge most worth knowing of the human learning processes placed upon a fundamental perceptual-esthetic, information-abstracting foundation.

If this can be achieved, which I believe it can, it will make visual literacy necessary and appropriate to general education and initiate the fulfillment of a dream of one of the venerable fathers of a modern education, J. A. Comenius, who in the 15th century wrote:

> We do not demand for all men exact or deep knowledge of all the arts and sciences.... It is the principles, the causes and the uses of the most important things in existence that we wish all men to learn.... For we must take strong and vigorous measures that no man in his journey through life, may encounter anything so unknown to him that he cannot pass sound judgment on it. (14)

Though this may seem like wishful thinking, there is movement in this direction even among cognitive psychologists -- investigators who for too long have been fragmenting the research in the area of human learning. Herring, for example, in discussing the characteristics of a theory of skills instruction emphasizing visual skills training, calls first for the identification of the attributes of the learner which are relevant to this, and second, the establishment of ways to distinguish these abilities among the learners. (15) He is asking for the investigation of learning styles, much work on which has already been done. (16)

The "sound judgment" called for by Comenius can only be created under the influence of a new educational paradigm which is simpler yet richer and deeper than the present form cognitive psychology offers. Speaking plainly, its generic need to isolate processes for achieving "validity" offers no help in terms of curricula change which suffers today from the fact that there is too much to learn in too little time -- quite a paradox, since I believe there is plenty of time to teach the knowledge most worth knowing. Only a more unified educational paradigm can solve this dilemma.

An example of the failed heuristic of cognitive psychology appears in Tillman Ragan's article "Visual Perceptual Abilities and Cognitive Styles." (23) He defines cognitive style as "psycholgical dimensions which are said to represent consistencies in an individual's manner of acquiring and processing information." He then offers brief descriptions of ten of the most prominent cognitive dimensions taken from the literature ranging from Witkins' Field Independence-Dependence research to Statosefano's work with leveling/sharpening.

In comparing what visual literacy attempts to do in training visual skills, which it has done successfully, Regan is critical of cognitive research whose focus on "individual difference" seems to demonstrate that this is resistant to change. He makes the point that "The differences seen between people, as currently attributred to cognitive style, may be merely aptitude differences, not ceilings on capability." (23)

He then goes on to point out that much of what cognitive psychology has investigated has come form curiosity about perceptual processes. Yet it has achieved no unified approach toward these as have the viewpoints of Arnheim (21) and the Gibsons (19,20). He calls attention to Arnheim's idea of the "percept" as the building blocks of visual thinking, a perceptually based analogy to the cognitive function of the "concept."

> "...A goal of education should be for advanced perceptual developement. Such a goal may be closely related to goals held by whole-brain education advocates who have drawn inspiration from hemispheric laterization studies. It may be the case that work in brain physiology has provided inspiration on what might be achieved in school learning and that work in perception and cognitive styles may lead to better insight into how it may be achieved. (23)

We have in all this a very serious problem for research. Because analytical visual literacy is in the very youth of its evolution, a large, consistent perspective does not yet exist.

Neither does a large, consistent perspective for cognitive psychology exist, except perhaps for the new and growing field that is being called "cognitive science." (24) It would seem that a narrow cognitive approach cannot take the lead in contributing to the reform needed by the educational paradigm. The isolation of learning processes by categorical definition and the separating of levels by analysis has led to little that is concrete, less integrative. The investigators in cognitive science, who also are having a difficult time defining the parameters of their field, are concerned with the dimensions of artifical intelligence and models of information storage, processing and retrieval. Though they seem to be digging more deeply and more holistically than their forebears into the working of the mind, they have a strong linguistic orientation and an overconfidence in computer modeling that is not warranted. (25)

The blind spot in the cognitive approach was pointed out by Ulric Neisser in his oft quoted volume Cognitive Psychology. (26)

> ...Some thinking and remembering is deliberate, efficient, and obviously goal-directed; it is usually experienced and self-controlled as well. Other mental activity is rich, chaotic, and inefficient; it tends to be experienced as involuntary, it just "happens." It often seems to be motivated, but not in the same way as directed thought; it often seems not so much directed toward a goal as associated with an emotion.
>
> ...The simplifications introduced by confining the subject to a single motive and a fixed set of alternative responses can be justified only if motivation and cognition are genuinely distinct. If -- as I suppose -- they are inseparable where remembering and thinking are concerned, the common experimental paradigms may pay too high a price for simplicity.
>
> ...(A) really satisfactory theory of the really higher mental processes can only come into being when we also have theories of motivation, personality and social interaction. The study of cognition is only one fraction of psychology, and it cannot stand alone. (26)

It is an interesting bibliographical note to point out that bracketing the year of publication of Neisser's book, the remarkable husband and wife team, James and Eleanor Gibson, published their seminal volumes (19,20) and just two years later in 1969 Rudolf Arnheim published his Visual Thinking. (21)

It is not only the emotional component of human behavior that defies the cognitive approach. Another major come-uppance is its bafflement about how to deal with images or imagery. (25) Yet, the major element for both the input phase and the output phase of skills building for achieving visual literacy is dealing with the image -- the personal configuration, gestalt, picture, pattern or visual that perception brings into the brain, and the expressive composition that has to be created to carry a visual message to someone else.

The supreme importance of the image as an information carrier has not been understood by most psychologist and educators in spite of the fact of what John Dewey observed (27) back in 1897. Bringing that sense up to date, Susanne Langer writes in her monumental work Mind: An Essay on Feeling. (28)

> ...A concept is born of words, its exemplification found in the perceptual world. But those Baconian methodologists who think one should simply check a hypothetical concept against direct observation don't know what a help in that business is lively imagination can be! The part played by imagery in the formation of concepts shows the intimate relation of perceptual and intellectual processes at all levels of human mental action.

Yet more and more research and investigation of the nature of the image and its role in thinking, communication and human behavior is being done. (29, 30)

Nevertheless, even in this more circumspect area ferreting out the knowledge most worth knowing is difficult. For example, in the field of perception the eidetic image has a long if spotty record in the range of attention paid to it by psychologists. Since this is one aspect of how images are processed in humans, especially in the young, it has significance to theorizing within the field of visual literacy. Linus C. Evans (31) traces the history of this psychological phenomenon and stresses its importance to language acquisition. He reviews all the theories involving eidetics and its relation to dual coding (Paivio) and common coding theory (Bower), and then mentions a minor point concerning the eidetic citing the imagery psychologist, Akhter Ahsen. (32, 33) He seems to have missed completely Ahsen's redefinition of the concept and his broader use of it that has been presented in papers and books published since 1968. Ahsen's research on the Eidetic Image represents a quantum jump from the classical understanding of its common form. Evans seems to have missed an astounding opportunity to buttress his excellent ideas by not having gone deeper into Ahsen's research. He cannot be faulted for time is limited for all of us and establishing priorities extremely difficult. Yet, this illustrates one of the problems connected with arriving ultimately at the knowledge most worth knowing. For the individual researcher longevity may be the problem! However, I did present Ahsen's conception of the Eidetic image at the 12th Annual Conference at the University of Maryland in 1980. (34)

Moving in another important direction from the field of perception in seeking to untangle the terminological problem, Earl Clark writes that the terminology representing basic concepts must be clarified. He is specific.

> The terms print, audio, and visual literacy give us a good start.... But we get into some conceptual difficulty.... Indeed, to say that print literacy refers to verbal abilities is to get us immediately into difficulty. Print is almost exclusively used to refer to visual manifestations while verbal, in most linguistic and psycho-linguistic literature is used to denote oral or auditory production (or reception). The suggested usage would lead to print = verbal = audio with the resulting category "audio literacy" as a somewhat confusing term. (35)

Clark goes on to say that the conceptual basis must be laid down with a careful delineation of "primitive" concepts. He identifies the basic idea to relate to forms of communication and is naturally led to identify "symbolism" as a key primitive concept. He says, "...we ought to find some solutions of our terminological concerns in looking at the nature of symbols." (35) He points out Dewey's distinction between theoretical symbols and qualitative symbols as representing each the *word* and the *thing* and its *picture*. Langer and Hill, he says, have illuminated the nature of these two sorts of symbols as the representational and the presentational; and he suggests a terminological scheme that begins to put some order into the central process form which all symbols spring -- the human abstractive process -- the continuum along which all perceptual facts can be placed. I diagrammed "the Axis of Abstracting" in my 1980 presentation. (34)

One more model and its contribution to theorizing needs to be discussed before we look at the last cluster of visual literacy definitions. Griffen and Whiteside (36) divide the literature dealing with visual literacy into three categories, which they admit often overlap. They call them the "theoretical, visual language, and presentational." Those who are concerned with visual language, "they state," express the need they see in terms of programs required...to help students become sophisticated image consumers and image makers." (37) They then quote O'Rourke, who wrote that we should think of visual literacy as a "survival skill necessary in a predominantly visual culture." (38) This is precisely the point of view I take in discussing visual literacy in its relation to ancient man. Their major point is to stress the need for research in the design of the visual for maximal instructional purpose.

> "...because we have only begun to scratch the surface with our research, an area that needs more attention is that of how people learn from visual materials.... We believe that the theoretical must if it is to be useful, give rise to practical applications, and innovations by practitioners need to be subject of further research by theorists. The struggling efforts of those concerned with designing effective visuals should be the catalyst that fosters new explorations into ways to utilize visuals in order to maximize instructional efforts. (36)

This leads us logically to the last cluster of definitions created by teachers. Many educators sense the power that visual literacy abilities can give them and their students. They sense first its interdisciplinary nature and then its capacity to help them build skills for both thinking and expression. Some examples of their descriptive "definitions" may seem strange to us in light of the theoretical ones examined. Nevertheless, we can recognize within them a certain sensing of the intrinsic values that imagic, representational, iconic, non-discursive, non-verbal, or any other way one wishes to state it, *informing* has and what it can lead to.

> One major task of visual literacy, as a result, is to teach young people to bring a critical sense to bear effectively on their viewing, even to learn that

> there is such a thing as a critical sense. It can also help them to learn to make distinctions between reality and TV's depiction of that reality.... At its finest and most responsible, visual literacy is a moral tool; it is one of the ways we need to the future...." (Michael Lasser) (39)
>
> Visual Literacy has as many definitions as it does users. Perhaps the definition can be incorporated into a philosophy of this author when it comes to what goes on in one eighth grade classroom of English. This is, every youngster is entitled to have an opinion of his/her own, to think for him/herself, and to express those opinions and decisions through all of the available media. It works. (Sheldon Katz) (40)

The practioner is impressed by the efficacy of visual literacy techniques; and need not have a deep understanding of a philosophical or theoretical base. Superior teachers in all fields, especially the arts, quickly design or adapt their teaching methods to take advantage of the powers inherent in the approach.

The definition of visual literacy that I offer now has a special purpose. It is an attempt to give the educated layman, classroom teacher, and educational administrators the sense of a new direction that can be significant to all education. For this sense to be clear, it must have no "secret" words that only the specialist uses and that only other specialist can understand. It may not be a definition that suits everyone, but it is offered for discussion.

> Visual literacy is an ability to interpret by means of trained perceptual capacities feelings, ideas and information; and to communicate them imaginatively with compositions crated via a diversity of visualizing mediums.

I submit that the only word in this definition that might need discussion to clarify the goals desired in achieving this ability is literacy.

Literacy is an important term which itself is going through an evolution of its meaning. Williams and Debes begin a pertinent analysis of this. (41)

Literacies, Literatures and Composition

If we are to stick with the master phrase "visual literacy," which I believe we must, we ought, however, shift our sights to a broader view historically of what this can be an umbrella for.

Literacy is a far-stronger and more meaningful term that "languaging," which is a word I believe we should eschew. What must be made clear to the public and to educators is what has created human literacy and of what it consists. Essentially, it is familiarity with bodies of works made up not of "languaging," but of all the genres of communication ranging from the early chant through the classic Greek plays, to modern concrete poetry -- and even the scientific paper. It is already a very broad concept.

The processes by which humans became literate were not only by learning to read and write, but also be discovering and making the tools and machines that ultimately fostered and accelerated the expansion and creation of new mediums in which to become literate. No doubt it all began with the discovery and application of "the trace" which Gibson describes aptly as "the fundamental graphic act." (20)

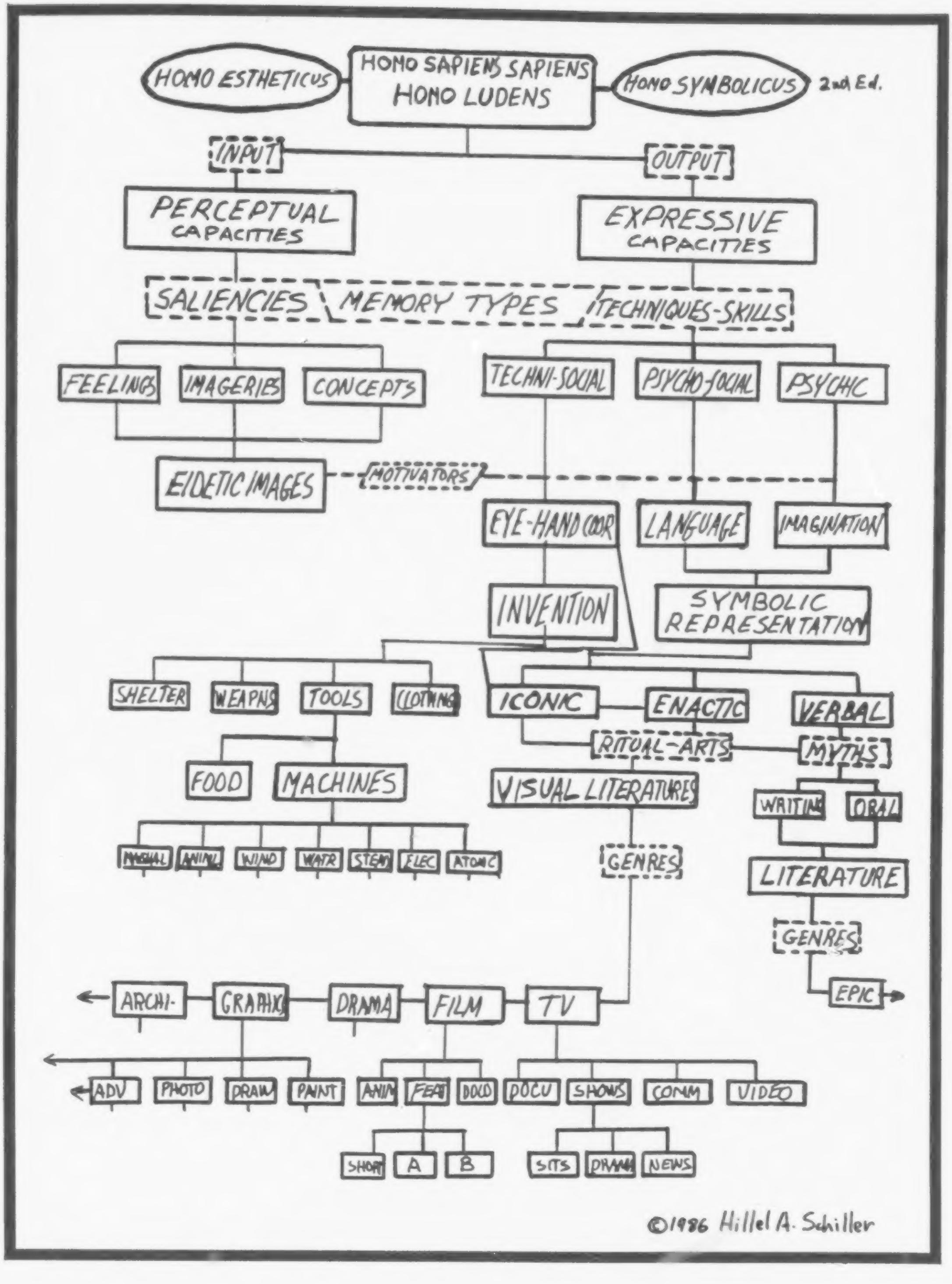
There are great bodies of visual literature to become familiar with. For centuries they have been providing enormous emotional satisfaction, information, and inspiration to millions who are not even aware to their literacy in these fields. It is merely a matter of acknowledging them as visual literatures. Thus can the meaning of literature be extended to our own field. Cannot we characterize more of the human creative achievement emphasizing the appreciation and producing of image based genres as literatures to be mastered? We do it, but only provisionally now. Most art courses are only electives, except for art major. There should arise in a more prominent way the use of the category of VISUAL LITERATURE.

We are on solid ground because certain visual literatures are already recognized terms of their reference mode. We have picture collections in libraries. There are film libraries. Art museums contain many genres of visual literature carefully classifying myriads of sketches, cartoons, etchings, prints paintings and sculpture in their historical and modern forms. Museums of natural history contain collections of articles of human creative and inventive expression demonstrating primitive and modern "fashions" in clothing, shelter, and all other human artifacts from eating utensils to weapons -- each having its own characteristic form of evolving techniques and styles.

From this point of view most visual literatures have had a far more venerable and truly ancient history than the mere 4000 years or so of records we have for the origins of writing and reading! Indeed, as has been observed often in texts, all verbal literature, western and oriental, owe a great debt and its very existence to THE PICTURE.

Clearly, all the genres of visual literature are written, drawn, painted, diagrammed, printed or composed. All of them obviously must be "read" to be understood or interpreted. It is a far richer literature as well in many ways not being merely graphic, but including all the non-verbal and 3-D enactic arts. It encompasses far more of human expressive creation and is truly universal. The accompanying diagram (Figure 1) attempts to illuminate the input/output model of human perception and expression suggesting how all literacies have developed from the abstractive processes of symbolic and imagic expression.

A major stumbling block in some of the theorizing that circulates with the language analogy to visual literacy, is the attempt to indicate the "units" or "elements" of visual language. Much time and ink has flowed in attempts to discover the grammar (parts of speech) and syntax


HOMO ESTHETICUS
HOMO SAPIENS SAPIENS
HOMO LUDENS
HOMO SYMBOLICUS
2nd Ed.
INPUT
OUTPUT
PERCEPTUAL CAPACITIES
EXPRESSIVE CAPACITIES
SALIENCIES
MEMORY TYPES
TECHNIQUES-SKILLS
FEELINGS
IMAGERIES
CONCEPTS
TECHNI-SOCIAL
PSYCHO-SOCIAL
PSYCHIC
EIDETIC IMAGES
MOTIVATORS
EYE-HAND COOR
LANGUAGE
IMAGINATION
INVENTION
SYMBOLIC REPRESENTATION
SHELTER
WEAPNS
TOOLS
CLOTHING
ICONIC
ENACTIC
VERBAL
RITUAL-ARTS
MYTHS
FOOD
MACHINES
VISUAL LITERATURES
WRITING
ORAL
MNUAL
ANIML
WIND
WATR
STEM
ELEC
ATOMIC
GENRES
LITERATURE
GENRES
EPIC
ARCHI-
GRAPHX
DRAMA
FILM
TV
ADV
PHOTO
DRAW
PAINT
ANIM
FEAT
DOCO
DOCU
SHOWS
COMM
VIDEO
SHORT
A
B
SITS
DRAMA
NEWS

©1986 Hillel A. Schiller

Figure 1.

(word order) of the various visual and enactic arts. The basic unit is often generalized as the "visual" and visuals are called for to exemplify the idea of visualizing. To me "visuals" has become a jargon word. I prefer words like images, pictures, pictorials, illustrations, or even iconics, and in appropriate places words like diagrams, graphs, drawings, figures, etc. All of these perform the same functions as natural language such as explaining, informing, describing or inspiring. They are all message carriers. But they do not actually parallel *words* in their modes of expression. Words are completely abstract symbols that merely *stand for* -- are conventionalized symbols, the products of linguistic or verbalizing abilities. They issue from the *temporal* property of speech and hearing and the *linear* necessities of writing and reading. Their very abstractness has evolved rather strict ordering processes for universal comprehension.

They can in no way truly *re-present* their referent as an icon or image can, except as they *recall* this very thing, the *image*. We cannot base the understanding of pictorials on the same hierarchal or systematic kind of ordering that forms the efficiency of natural languages, whose *linguistic abstractions* demand contextualization to provide meaning.

Every image is an *esthetic abstraction* with a depictive capacity ranging from highly abstract (printed letter of the alphabet) to exacting isomorphism (realistic painting, model, blueprint). An esthetic abstraction is a structure or pattern having an intrinsic relation to the form it is being used to depict. Esthetic abstractions, whether iconic or enactic, are created and understood in different ways than natural language because they are keyed to sensory or perceptual specializations to carry a precise correspondence to the distinctive features they are symbolizing. This is the intrinsicness of their nature. This is what makes them "personal!" This is what makes them both subjective and objective at the same time. Each medium in which the message image is engendered has its characteristic form and its own rules and techniques for expression.

Its "elements" may be difficult or impossible to differentiate as "units" as letters, words or numbers are easy to differentiate. And there is no way to "teach" a syntax for painting -- unless you do it by the numbers!

So why search for these "grammars" and ephemeral syntax? The visual symbol has a much broader, deeper and more powerful usefulness because of its morphological nature -- its shape -- which constitutes its characteristic form of *already patterned information*. At a fundamental perceptual level *shape* records the most salient and ubiquitous information needed for all human understanding and action -- spacial relations. The representations of shape carry with them most often the functional perceptual *fact* that is the intrinsic meaning of the shape. This is the self-contained *contextual* factor abstracted from the quality being depicted. This is how we are able to recognize or identify or describe any thing. Even abstract art cannot eschew using "shape" to exhibit "formlessness." Even in representing *chaos* form must be used!

And even though there are elemental shapes and basic colors, the ways to order them are subjective. There are no truly systematic or universal orderable "units" in the linguistic sense to interpret until meanings can be fitted to larger constructs patterns or compositions. The presumed "syntax" governing this process Dondis identifies as *techniques* -- compositional practices that must be mastered not as rules or conventions but as eye-hand coordinative skills by every individual doing his or her own thing. This practice Dondis calls *exploration*. No language is or can be taught effectively this way.

In all the imaginative visual arts, *the composition* is the fundamental unit -- and *composing* the fundamental process. Indeed, composing is the single process the brain does best, whether asleep or awake. Susanne Langer in discussing dream images writes, "These visual images, which are commoner and probably more primitive than auditory ones, show one of the most important functions of the human brain -- composition...." (28) One could look upon this as a superb one word definition of *imagination* in all the human modes it operates.

Visual literature has its genres ranging through its graphic forms, sculptural and architectural forms, and its TV and video forms. These have no formal units unifying these as language has. They do have basic processes, however, governed by principles with which all their meaningful forms are created and interpreted. They are the esthetic principles embodied in the *techniques* Dondis has so eloquently delineated -- all put to use in forming the visual object -- the composition.

"Composition" is a term hardly foreign to teaching reading and writing. It is the public school version of the "essay" -- why another word had to be adopted for this is beyond me. Here is one term, nevertheless, that is of a unifying nature in the language analogy relationship. Even Neisser's conception of "cognitive units" supports this thesis:

> The only definable units of perception are those which can be given a meaningful interpretation in cognition. I can think of only two indispensable levels of organization at which "units" could be said to exist. (a) The products of figural synthesis, introspectively available and usually given a verbal label.... (b) The properties of stimulation which help determine that synthesis. (26)

I contend that in discussing the basic elements of visualization the term "units" should be banned. Because of the disjunction between linguistic and esthetic expression demonstrated by the axis of abstraction in which *patterning* rather than *discursiveness* is the major mode of acquiring and expressing visual knowledge, the concepts of grammar and syntax should give way to images and composing.

Using the language analogy when teaching about esthetic values and techniques provides an unnecessary distortion. Strict adherence to the analogy fragments the "whole." It assumes that the construction of a picture can be broken down into formal elements which do not exist as they do in linguistic expression. Nor does the processes of linguistic ordering of letters, words, sentences and paragraphs exist in the composing of any visualization.

Visual intelligence or visual thinking uses the logic of perception which is subjective and learned for itself mainly by exploration, as Dondis has shown. (4) Perhaps the best differentiation of verbal and visual knowledge is offered by James Gibson in a diagram he used to show the difference between perceptual meaning and verbal meaning. See Figure 2.

THE DIFFERENCE BETWEEN
PERCEPTUAL MEANING + VERBAL MEANING

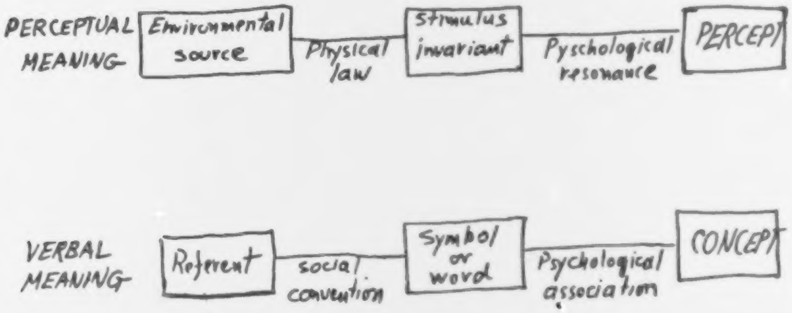

PERCEPTUAL MEANING
Environmental source
Physical law
Stimulus invariant
Pyschological resonance
PERCEPT
VERBAL MEANING
Referent
social convention
Symbol or word
Psychological association
CONCEPT

Figure 2

Most human observation takes place initially by means of two eyes and these observations are interpreted by a single brain with a unique orientation. In interpreting what it registers about an observation, the processes of accomodation and creative expression are guided by a human imagination which first interiorly and then externally

- composes a viewpoint about a situational scene
- composes a sketch, drawing or still picture
- composes a set, a scene, a shot, a play, a film
- composes a dance
- composes a painting
- composes a sculpture

Even a building or a monument before it is actually constructed is composed via plans and blueprints.

As suggested the public school composition is in actuality a personal essay, the generic term for such a work. Pursuing the analogy there can be no disagreement that every piece of original art -- applied or graphic -- in any genre can be considered to be the artist's personal essay on the theme, feeling, idea, or piece of information. Every visualization from the lowly graph of gross national product to Michaelangelo's David is a more or less conventionalized composition.

It is in providing a deeper understanding of this process of *composing* that visual literacy can offer education a pathway into the future that can begin to focus on the knowledge most worth knowing.

REFERENCES

1. Dewey, T. *The sources of a science of education*, Liveright, 1929.

2. Debes, J.L. The loom of visual literacy, In C.M. Williams & J.L. Debes (Eds.), *Proceedings, first national conference on visual literacy*, N.Y., Pitman, 1970.

3. Pfeiffer, P., Thompson, F. & Newton, E.B. Visual literacy and the elementary school student: Project VUE. In R.A. Braden & A.C. Walker (Eds.), *Television* and visual literacy: readings from the 13th annual conference of the international visual literacy association, Bloomington, Indiana University, 1982.

3a. Debes, J.L., *op. cit*.

4. Dondis, D. *A Primer of visual literacy*, MIT, 1973.

5. Hortin, J.A. Visual literacy and visual thinking, *AECT Research and theory newsletter*, 1980, *11* (3), Association for Educational Communications and Technology, 1980.

6. Debes, J.L. In M.J. Streibel, Visual literacy, television literacy & computer literacy: some parallels & a synthesis, *Journal of visual and verbal languaging*, *5* (2), Fall, 1985, the international visual literacy association, 1985.

7. Sinatra, R. *Visual literacy connections to thinking, reading and writing*, Springfield, Illinois: Charles C. Thomas, 1986.

8. Considine, D.M. Visual literacy & children's books: An integrated approach, *School library journal*, September, 1986, 38-42.

9. Anderson, J.A. In M.J. Streibel, *op. cit*.

10. Streibel, M.J. Visual literacy, television literacy & computer Literacy: some parallels and a synthesis, *Journal of visual/verbal languaging*, *5* (2), Fall, 1985, International visual literacy association, 1985.

11. Streibel, M.J. *op. cit*.

12. Fork, D.J. & Jonassen, D. Search for a paradigm: A theoretical approach to the study of visual literacy, Visual literacy newsletter, 5 (5), July, 1976, International visual literacy association, 1976.

13. Rubin, B. Exploring the relationships between visual literacy and esthetic education, Visual literacy newsletter, 7 (6), June 1976, International visual literacy association, 1976.

14. Comenius, J.A. John amos comenicus on education, Classics in education #35, Teachers college press, Columbia university, 1966.

15. Herring, R.D. Theory construction: A step beyond visual literacy, Visual literacy newsletter, 8 (6), June, 1979, International visual literacy association, Indiana university audio-visual center.

16. Dunne, R. & Dunn, K. Teaching students through their learning Styles: a practical approach, Reston, Virginia, Reston Publishing Company, 1978.

17. Hodgkinsin, A. Teaching the screen language, Journal of visual/verbal languaging, 5 (1), Spring, 1985, International visual literacy association, 1985.

18. Biber, B. A learning-teaching paradigm integrating intellectual & affective processes, Behavioral sciences frontiers in education, E.M. Bowers & W.G. Hollister (Eds.), New York, Wiley, 1967.

19. Gibson, E. Principles of perceptual learning and development, New York, Appleton-century-crofts, 1969.

20. Gibson, J. The senses considered as perceptual system, Boston, Massachusetts, Houghton Mifflin, 1967.

21. Arnheim, R. Visual thinking, Berkeley, University of California, 1969.

22. Dewey, J. My pedagogical creed, In M. Dworkin (Ed.), Dewey on education, New York, Teachers college press, Columbia University, 1957.

23. Tillman, R. Visual perceptual abilities and cognitive styles, In L. Burbank & D.W. Pett, Contributions to the study of visual literacy, Bloomington, 1983.

24. Sharkey, M. (Ed.), Advances in cognitive science, New York, Wiley, 1986.

25. Dreyfus H. & Dreyfus, S. Why skills cannot be represented by rules, In M. Sharkey, (Ed.), Advances in cognitive science, New York, Wiley, 1986.

26. Neisser, U. *Cognitive psychology*, New York, Appleton-Century-Crofts, 1967.

27. Schiller, H. The nature of visual literacy, In L. Burbank & D.W. Pett, *Contributions to the study of visual literacy*, Bloomington, 1983.

28. Langer, S. *Mind: An essay of human feeling*, Volume II, Baltimore, Johns Hopkins, 1972.

29. *Journal of mental imagery*, The international imagery association, Brandon House, P.O. Box 240, The Bronx, New York, 10471.

30. Chiswell, J.N. & Lamberski, R.J. *Imagery -- a return to empirical investigation*, In M.R. Simonson & D. Rohner, (Eds.) *Proceedings of selected research paper presentations at the 1980 convention of the association for educational communications & technology, research & theory division*, Ames, Iowa, College of Education, Iowa State University, 1980.

31. Evans, L.C. Eidetics & language acquisition, *Journal of visual/verbal languaging*, *4* (1), Spring 1984, International visual literacy association, 1984.

32. Ahsen, A. *Eidetics: a visual psychology*, Presentation at American Psychological Association 81st Annual Conference, 1973, Yonkers, New York, Eidetic Analysis Institute, 22 Edgecliff Terrace, Yonkers, N.Y. 10705.

33. Ahsen, A. *Basic concepts in eidetic psychotherapy*, New York, Brandon House, 1973.

34. Schiller, H. A view of perceptual saliency, In F. Dwyer, (Ed.), *Proceedings of 12th annual conference on visual literacy*, University of Maryland, 1980.

35. Clark, E. Visual literacy...toward a definition continued, *Visual literacy newsletter*, *6* (3), March, 1977, International visual literacy associaiton, 1977.

36. Griffin, R.E. & Whiteside, J.A. Visual literacy: a model for understanding the discipline, *Journal of visual/verbal languaging*, *4*, (2), Fall, 1984, International visual literacy association, 1984.

37. Hennis, R.S. Research in the visual language needed, *English journal*, *70* (2), 1981.

38. O'Rourke, B. Whatever happened to visual literacy? *English journal*, *70* (2), 1981.

39. Lasser, M.

40. Katz, S. A mosaic pattern education through visual literacy, *Visual literacy newsletter*, 1976.

41. Debes, J.L. & Williams, C.M. *Provocative papers*, Series # 1, 1978.

42. Gibson, J. *op. cit.*

Tracing the Codes of Educational and Instructional Television

by

ANN DEVANEY BECKER

Since Educational Television (ETV) and Instructional Television (ITV) are both forms of educational communications and as such have their own language, methods of textual analysis may be employed to discover the manner in which they currently construct meaning. Among textual methods, semiotics has been successfully employed in the analysis of commercial television (Fiske and Hartley, 1978) and film (Metz, 1974, Carroll, 1980) and appears appropriate for the study of ETV and ITV. Semiotic analysis would call for a description of two types of meaning in the communication, syntagmatic and paradigmatic. Syntagmatic meaning is organizational in nature and refers to the syntax or the grouping of units under study; for example, the manner in which shots are edited and sequenced is part of the syntax of a TV scene. Paradigmatic meaning is referred and describes the way in which the units under study draw their meaning from domains (paradigms) outside of the TV program. A fade which suggests a passage of time is a technique which has paradigmatic meaning in a TV scene, since its meaning was established in another domain and at another time, namely early cinema.

Distinctions and Similarities

Although ETV and ITV are ripe for semiotic analysis, their intertwined histories and structure present some unique problems which will be explored in this paper. The discussion will attempt to establish the two media as separate entities, identify some formats employed in each medium, and describe the influences on production within those formats. It will trace a few origins of within-format communicative codes and describe some of their borrowed meanings. Since semiotic analysis can only explore a medium as it is practiced, the trace sometimes overlaps with or is a sub-category of educational television.

ITV. Unlike commercial television which contains formats such as dramatic narrative, talk shows, situation comedies, news, etc., ITV has no discrete internal categories. The presence of discrete categories makes the analysis of commercial television a bit more systematic, because over time, the structure of such formats has become fairly well articulated. Analysis of commercial television, therefore, might begin with the description of format codes which are simply syntax patterns appearing and reappearing within a program format. ITV offers no such easy approach to analysis. Within one ITV program a viewer may find varying cinematic and television formats employed to present a lesson. Techniques are freely borrowed from documentary, dramatic narrative, and training films. And, since the inception of Sesame-Street, from TV commercials, TV news, talk shows, etc. Since format structure often shifts two or three times within a program, textual analysis becomes difficult and an antecedent step must be taken. Formats within and between ITV programs must be described and their origins traced before an analyst can confidently describe codes within any program. For example, the appearance of a talking head in dramatic narrative on commercial television might be considered a technique borrowed from TV news or documentary film, and its codes could be easily traced. To attribute the origin of a talking head on ITV to those two sources would be misleading. ITV is an entity separate from commercial television and has its own unique history which accounts for not only the early structure of the medium, but which provides an infrastructure for programming today. Since that infrastructure was and is closely aligned with American curriculum practices, its description could present clues to paradigmatic meaning encoded in programs.

ETV. Educational television, on the other hand, has practically severed its ties with the American curriculum and has moved closer to forms of commercial television (As I say this, the sands of practice are shifting under my feet. Recently, PBS stations have been forced to hire educators again as integral members of design teams for the production of certain educational series. Educators and instructional technologists had worked with, and sometimes as, ETV producers and directors in the '60s and early '70s, but the relationship which had been troubled from the start finally dissolved. Educators had struggled to insure a program's instructional effectiveness, and ETV producers had moved closer to the forms and aim of commercial television. It appeared that instruction and entertainment did not mix. In the early '80s, however, when PBS stations were financially constrained, they received a boost from the Annenberg Foundation which pledged $150 million dollars over ten years to bring an accredited junior college curriculum into American homes by means of educational television. PBS started to design and produce telecourses and since these courses needed accreditation, educators had to be included from the beginning. Annenberg is forcing PBS stations to enter the instructional television market again, but the initial Annenberg telecourses, such as *Congress We The People*, look suspiciously like a form of entertainment which excludes instructional design considerations.) Most ETV programs, other than the telecourses, are not produced as formal courses for specific audiences and it is these programs I wish to describe. Educational television, not only incorporates the forms of commercial television, but its formats are usually discrete categories and easier to analyze than ITV. As I watch a dramatic narrative on PBS, it usually remains a dramatic narrative. Likewise, ETV documentaries or ethnographies do not usually change their form midstream. Identification, therefore, of format codes and possibly their domains of origin may be more readily accomplished.

Code Set Theory

One way to trace the codes of ETV and ITV is to study the origins of a particular format as well as one program. Christian Metz (1974) proposes a helpful code set theory which allows this analysis to proceed. By examining commonalties between and among dramatic narrative film and its sources of influence, he identifies overlapping communicative practices and those which are unique to the medium. He describes three types of codes, non-specific, shared and specific. Non-specific codes, he believes, belong to many areas of culture which he calls the domain of general culture; shared codes are those cinema borrows from another medium; and specific codes are those unique to the medium. In cinema, one unique code would be montage. (Metz, 1974) I would like to trace codes within formats, and to do that, I will borrow the notion of code set theory from Metz. All domains communicate messages, but those which obviously use communications are media. Other domains use communications in various ways, for example, a Senate bill would communicate its purposes in the accompanying document. Communications, therefore, coming from media or other domains, including Metz's designation of the domain of general culture, would appear in the forms of words, images, or behaviors.

ITV Lecture

The dominant format in the early days of ITV was lecture, particularly the talking head. It was a format that filmmakers and educational technologists knew would be instructionally ineffective, so the questions arise. "Why was it and how did it become the dominant format?" In another paper, (Becker, 1986) I have attempted to answer those questions by exploring the history of ITV in the 1950s and from that investigation, I would trace the sources of influence on the lecture format in the following manner.

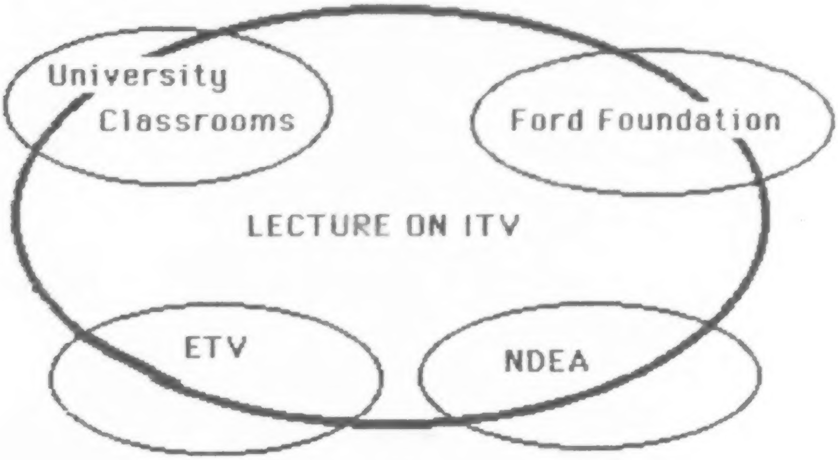


Figure 1. Some Domains Which Share Codes With ITV Lecture

The areas of overlap suggest the presence of similar communicative practices which could be traced through language, image, or behavior. Certainly, there is little to be gained from studying the visual track of a talking head, since most of the information is in the audio track, therefore lecture codes are primarily linguistic. I shall offer two short examples. Similar communicative practices existed within the National Defense Education Act and lecture courses on ITV. The NDEA was passed in 1958 as a response to the launching of Sputnik, and it allocated millions of dollars for the teaching of math and science on instructional television. Math and science, however, were to be taught for the pragmatic reason of maintaining the technological strength of the country in arms and space. (Finn, 1972) One NDEA code, therefore, which embedded itself in the lecture format was the privileging of technical knowledge. This appears over and over again in the language of the Act, in the programming choices made on ITV and in the content of specific lectures. One Ford Foundation code which embedded itself in the ITV lecture format was the repeated request to have science and math experts (university professors) as designers and teachers of telecourses. (Saettler, 1968) This code evinced itself in design choices and the pedagogy of the programs themselves. These are only two of many codes from influential domains. Since it is my intent to give an overview here, I will not describe the others, but proceed to a discussion of an ETV format.

ETV Drama

If one were to examine the dramatic narrative format on educational television by analyzing specific programs and investigating the histories of their production, the following domains might emerge as influential.

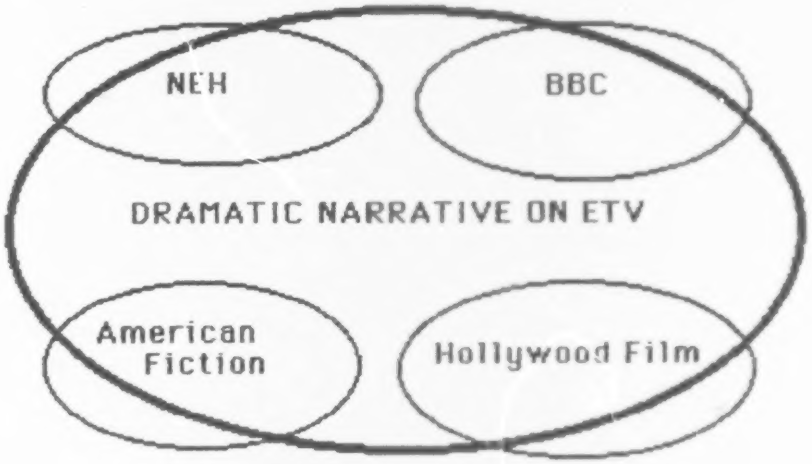


Figure 2. Some Domains Which Share Their Codes With ETV Drama

Some PBS stations, particularly WGBH, Boston, which has produced some of the better American dramatic narratives on ETV, openly admit their proclivity to copy successful BBC dramas (Neil, 1979). Often that tendency has led them to imitate BBC staging and shooting practices and it is these practices which contain the shared codes. Since the National Endowment for the Humanities funds many ETV dramas, NEH agendas get embedded in design and production. For example, when designing and producing *The Scarlet Letter* (a WGBH program funded by NEH), the Endowment maintained editorial control over the scripts. A panel of NEH experts who were university professors, not script or fiction writers, had to approve the scripts before shooting could take place. The panel, at first, consisted of American literature professors who were concerned with fidelity to the Hawthorne novel, but during the script revision process the panel shifted to American history professors who were concerned with fidelity to 18th century New England. (Kufrin, 1970) Most likely, the panel changed because the members' periods of service had expired. But the script writer, who had made changes to satisfy requests of the literature professors, was then asked to make additional changes to reflect a more accurate picture of early New England. When writing *The Scarlet Letter*, Hawthorne had not carefully checked his historical facts and descriptions. These historical experts cared to correct that flaw in the novel. Codes embedded in the first literary revision were drawn from the language of the first review and codes embedded in the second historical revision were drawn from the language of the second review.

Hollywood film practices are evident in the production of many dramas on ETV and they carry with them advantageous and disadvantageous codes. In two WGBH productions, for example, Hollywood codes worked in disparate ways. Three Irwin Shaw short stories adapted for television were shot by television production crews who incorporated Hollywood dialogue codes, and a pattern of tightening shots for building tension. These worked so well to heighten suspense on the small screen.

The Scarlet Letter, on the other hand, was shot by a Hollywood director and and his crew who were, unfortunately, called in at the last minute. (Kufrin, 1970) The codes they employed to present the heroine were those which idealized and romanticized her. They used primarily low angle shots, many silhouette shots and tracking shots around the head of Hester. They brought with them Hollywood codes for presentation of the "good woman" (Borzello, 1979) and that detracted from the Hawthorne characterization.

ITV's Across Cultures

Often the formats of current instructional television programs shift within programs and the tracing of codes becomes more complicated; therefore, initial analysis must first be conducted program by program. For example, in a social studies series, "Across Cultures", produced by the Educational Communications Board of Wisconsin for 5th and 6th grade students, the format shifts between documentary and ethnographic forms. Codes in this series, however, may be traced, not only to these filmic forms, but to the following sources of origin as well.

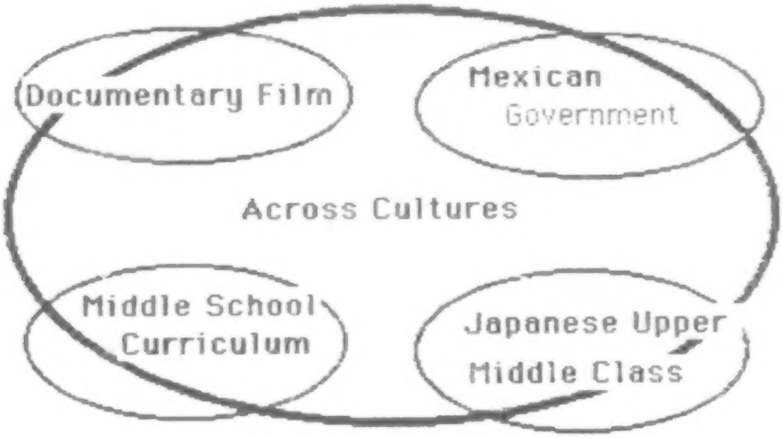


Figure 3. Some Domains Which Share Codes With *Across Cultures*

One of the codes borrowed from documentary and appearing in the series is that of narrator on camera and narrator voice-over. The narrator's voice of authority is used to interpret actions of the three cultures presented in the series, namely the Japanese, the Tarahamare Indians of Mexico, and the Baoles of the Ivory Coast. Communicative codes from the Japanese upper middle class infuse the section of the series on Japan, whereas the Mexican government's communicative codes infuse the section of the series on the Tarahamare Indians. Communicative codes which the Baoles use for interacting with outsiders infuse the segments on the Ivory Coast. (Salcedo, 1984)

ETV's *Congress We the People*

New PBS programs being produced with Annenberg funding for delivery to homes and classrooms do, in some sense, resemble instructional television, since formats change within programs. In another sense, however, they appear closer to the forms of commercial television, since they often fall to employ instructional design elements, such as simple graphics for naming unusual words or illustrating concepts. *Congress We the People* is a WNET Washington, D.C. telecourse now being broadcast on various educational channels across the country. Some of its codes could be traced as follows.

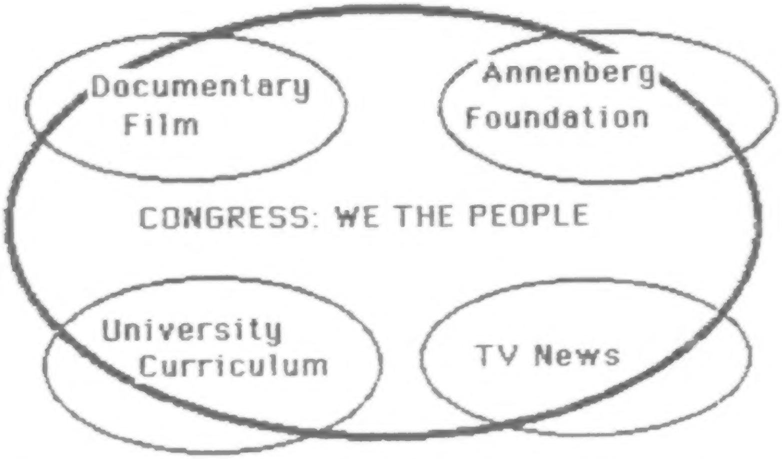


Figure 4. Some Domains Which Share Codes With *Congress: We The People*

The series quickly shifts between a documentary style and that of TV news, but neither style allows for repetition. A university professor of American Government was a consultant on the project since its inception; therefore, attention has been paid to curricular concerns.

In this paper I have attempted to describe some of the domains from which lecture on ITV and dramatic narrative on ETV draw their codes. Additionally, I have described some of the domains from which an ITV social studies series and an ETV telecourse draw their codes. This tracing process does not isolate all codes within a video program, nor is that necessary. Messages are shaped in conscious and unconscious ways by the producers of ETV and ITV. There are messages of which they are aware and messages which are invoked by the simple use of conventional structures. By analyzing structures, this process seeks to uncover those hidden messages.

References

Becker, A. (1986) A teaching model for the grammar of television, *Journal of Visual and Verbal Languaging*, 6, 1, 41-49.

Barzello, F. et al. (1979) Living dolls and "real women," *Camerawork*, 12, 10-11.

Carroll, J.M. (1980) *Toward a Structural Psychology of Cinema*, The Hague, Mouton.

Finn, J. (1972) AV 864 vs. AD 1970, *Extending Education Through Technology*, ed. by R.J. McBeath, 99-102.

Fiske, J. and Hartley, J. (1978) *Reading Television*, London, Methuen.

Kufrin, J. (1970, April) Tale of the golden letter, New York, 57-63.

Metz, C. (1974) *Language and Cinema*. Translated. by Donna Jean Umiker-Sebeok, The Hague, Mouton.

Neil, P. (1979, March) Challenge to BBC in Hester's trials of our Puritan era, *Smithsonian*, 86-93.

Saettler, P. (1968) *A History of Instructional Technology*, New York; McGraw Hill.

Salcedo, A. (1984) *A Rhetorical and Structural Analysis of Instructional Television*, Madison, WI, The University of Wisconsin-Madison, an unpublished doctoral dissertation.

Aspect Ratio:
The Projected and Televised Image

by

CHARLES FORREST

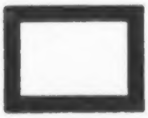
MOVIES ON TV

Feature films are increasingly available as videorecordings, including both contemporary releases and items from the "classical" repertory, many in the public domain. This increase in the number of movies on videocassettes and videodiscs is a boon not only to the home enthusiast, but to the instructor in film appreciation and cinema studies courses as well.

With so many titles available, instructors have the opportunity to expose their students to a wide variety of cinematic experiences, increasing their sense of the diversity of expression that the medium provides. However, in the transition from large screen to small the original motion picture undergoes a number of transformations which have implications for those using video to teach film appreciation. In addition to changes in the relative placement of projector, screen and viewer, and changes in the size and intensity of the image, the screen itself changes in shape. This paper will consider this change in the shape of the screen when a feature film becomes a videorecording, and examine some implications for the composition of the original image when this change occurs.

ASPECT RATIO

WIDE--SCREEN
ASPECT RATIO



TELEVISION
ASPECT RATIO

The shape of the movie screen is determined by its height and width, expressed as a ratio known as the aspect ratio. The aspect ratio of a motion picture can vary between 1:1.65 up to 1:2.55, with the **height** of the screen expressed as one, and the **width** of the screen expressed as some multiple of one. In other words, a motion picture image can be more than twice as wide as it is high, the so-called "wide screen." The aspect ratio of the familiar television screen, also known as standard aspect ratio, has been fixed as 1:1.33, or just one-third wider than it is high.

MOVIES ON TV

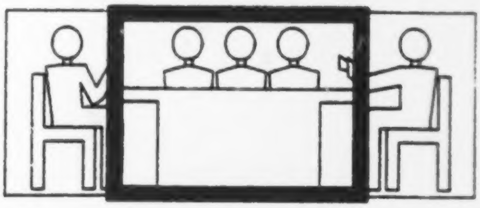
We might therefore expect that a great many movies would undergo some change in their aspect ratio, the shape of the screen, in their transition from large screen to small. The problem is: How to fit the wide-screen of the motion picture onto the narrower screen of the television set? There are basically four methods available to accomplish this transition, which we may call: 1) lopping; 2) squeezing; 3) masking; and 4) scanning.

When a motion picture is reproduced as a videorecording, it's as if the television camera were looking at the original movie. Since the TV camera sees in standard aspect ratio, it's apparent that it must miss something when it looks at a motion picture in wide-screen aspect ratio. We will consider what the television camera may be missing in each of the four methods, beginning with lopping.

LOPPING

Lopping is the most straightforward, the easiest and therefore the least expensive of the alternatives we will discuss. In lopping, the TV camera is essentially pointed at the center of the wide-screen image, and left there no matter what happens on screen. This, of course, has the effect of lopping off the outside edges of the screen, and whatever picture information is contained there is lost in the videorecording. We have seen how the width of the theatrical release motion picture screen can vary from little more than half again as wide as it is high, to considerably more than twice as wide as it is high. In very wide-screen motion pictures, lopping can result in considerable loss of picture information, and in fact create substantial distortion of the original image.

There are many ways to frame the image in a wide-screen motion picture to take advantage of the additional breadth and expansiveness that the wide-screen provides. Many of these wide-screen compositions can, in fact, be factored into smaller compositions that exist as subdivisions of the larger screen. Consider, for example, a composition in which the action is framed in such a way that the wide-screen image is divided more or less in half. Such compositions are common when filming a dialogue between two people, or perhaps a formal dinner party, as in our example. We can see that when this image is subjected to lopping, nearly half of each half of the screen is lost, and the video image consists of the



LOPPING

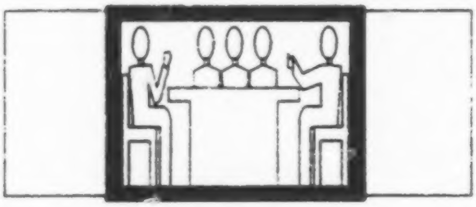
central action in the original shot, with a significant portion of the picture lost on the sides.

Lopping not only distorts the original image, which may have been carefully composed to take full advantage of the entire wide-screen, but the portion of the picture that remains may be difficult to understand and interpret, since significant action may now be taking place off-screen.

What can be done about this distortion in the wide-screen image introduced by lopping? The solution would seem to be a method which allows the entire original image to be displayed on the TV screen. Two such methods exist, which may be called squeezing and masking.

SQUEEZING

It's worth mentioning at this point that the actual picture on each frame of a strip of motion picture film is in approximately standard aspect ratio. How, then, does this image become the wide-screen picture which you see in the movie theatre? Wide-screen **projectors** employ a special lens called an anamorphic lens, which spreads out the picture from side-to-side, without increasing its height, thus filling the movie screen, a process sometimes referred to as "scoping," as in Cinemascope. This is possible because wide-screen motion picture **cameras** employ a similar anamorphic lens which "squeezes" the image onto the frame of film when the motion picture is being made. The projector corrects for this "squeezing" when the film is shown, and an undistorted wide-screen image is seen in the theatre.



SQUEEZING

When such a film is converted to a videorecording, it is possible to simply remove the anamorphic lens from the motion picture projector, and project the squeezed" image as it appears on the motion picture film itself. This will, of course, make everything on the screen appear elongated vertically, stretched from top to bottom.

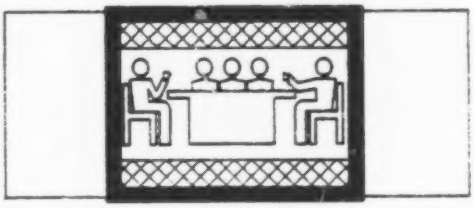
This removal of the anamorphic lens, or "de-scoping," is sometimes seen during the credits of a motion picture on television; squeezing ensures that no important credit information will be lost. The distortion that results, this stretching from top to bottom, is not too annoying when it occurs during the credits of a movie. But the result can be rather disconcerting when the credits roll against a background which includes objects, landscapes and especially people.

To show an entire movie this way would be ludicrous, although it is sometimes done, often late at night. People on screen look like eight foot giants who weigh a hundred pounds, which can turn the most serious film into a comedy. However, there is another method that is sometimes employed to effect the transition from movie screen to TV, which we can call "masking."

MASKING

This solution to the problem of de-scoping is to bring in the sides of the original wide-screen, compressing the entire original image onto the TV screen without introducing the vertical distortion of "squeezing." This can be accomplished by maintaining the original aspect ratio of the wide screen image, proportionately reducing both the height and width of the image for the TV screen.

However, this leaves blank spaces on the TV screen, in the form of a band at the top and bottom. This empty band can either be filled with some sort of decorative motif, as is sometimes seen during the credit "crawl" at the beginning or end of a wide-screen motion picture, or it can be left black, as you might have seen on some rock videos if you watch MTV.



MASKING

Masking may appear to be an excellent compromise solution to the problem of converting wide-screen images to the standard aspect ratio of television, and it does offer certain advantages over lopping and squeezing. Masking doesn't result in any loss of picture information, and it doesn't introduce the peculiar vertical elongation of squeezing. However, it does waste some television screen space.

It's apparent that when the enormous picture available in a movie theatre is reduced to a television screen just over a foot wide, a considerable loss of picture detail and clarity will be the result. We might therefore decide that we don't want to waste the space at the top and bottom of the television screen by leaving it blank, or filling it with some decorative motif; better that the image should fill the screen from top to bottom, and some adjustment be made elsewhere.

We have seen one example of how a wide-screen image can be framed and composed, with important image information filling the screen from side to side. But in many instances, the main action or main story-telling interest is in the middle of the screen, or in the middle of the left or right hand portion of the screen, as the action or dialogue switches back and forth from one side to the other.

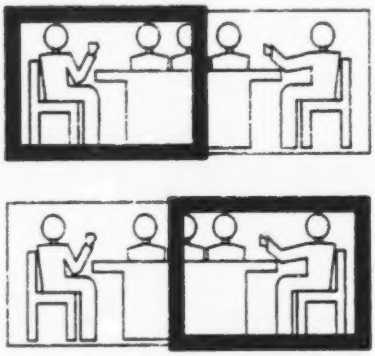
What we seem to need, therefore, is a method which enables the TV camera to "look" at different parts of the original wide-screen, much the same way that a person watching the movie looks at different parts of the screen when following the story or the action. Such a method is available in "scanning."

SCANNING

Scanning allows the TV camera to look at any part of the original image. A film-to-tape transfer device known as the **flying spot scanner** provides many positions for the camera to view, that is, the television camera may be centered on any one of a number of different positions along the horizontal axis of the screen. The flying spot scanner thus permits the TV camera to "pan" on the action, and scan from one part of the original image to another, depending upon where the significant action is taking place.

For example, we can imagine the scintillating table conversation of our dinner party guests. It would have been possible in the original movie to simply frame all the guests in a single shot, with no cuts or camera movements. While this gives us an excellent overall perspective, it presents a problem when the image is reproduced in standard aspect ratio.

On TV, the dinner guests at the extreme ends of the table will either simply not appear--what we have called "lopping"--or the image will be masked, with blank spaces or decorative borders at the top and bottom of the screen. (Squeezing is rarely used for the presentation of an entire motion picture, and the result of using it is so unacceptable that it hardly recommends itself for consideration.)



SCANNING

With scanning, however, the producer of the video duplicate is given the option of specifying which portion of the movie screen the TV camera will look at. For example, our dinner table conversation may be dominated by the guest at one end of the table--or at the other. We might even want the camera to look directly at the center of the screen, perhaps for the reactions of the other guests. This center position actually produces the same loss of picture we encountered in lopping. We can therefore think of scanning as a more sophisticated form of lopping, since with scanning, we are able to decide which parts of the picture to lop off.

The operator of the flying spot scanner will have to sit down and watch the entire film, to decide which portion of the screen will appear in the finished videorecording. While time-consuming, scanning can reduce significant image loss, and more importantly, loss of important image information. The "pan and scan" capabilities of the flying spot scanner substantially improve the compositional integrity and information content of a video duplicate of a motion picture initially released in wide-screen format.

WHICH METHOD?

We have examined four methods of converting wide-screen movies to video formats: 1) lopping; 2) squeezing; 3) masking; and 4) scanning. Each method has some drawbacks; we will discuss each one in turn and see if any recommend themselves.

Lopping is the quickest, dirtiest and cheapest method. As we have seen, the camera is simply pointed at the center of the original image, and anything which occurs outside the boundaries is lost. While this may be acceptable for a great many films, for a great many scenes, significant information can be lost off the sides of the television screen, and the compositional integrity of the original image can be very compromised.

Lopping cannot be recommended as a method, because the stationary camera aimed at the center of the movie screen is so apt to miss important events or dialogue occurring out to the sides. Unfortunately, a common way to show wide-screen movies on television is to remove the anamorphic lens to squeeze the titles and credits at the beginning of a film, put the lens back on during the rest of the film, lopping off the sides of the original picture, and then remove the lens at the end to squeeze the final credit crawl.

Lopping is used quite a bit, perhaps because the demand for better quality video duplicates of wide-screen motion pictures is not really large enough to justify the increased costs of the alternatives to lopping. This may be because the largest proportion of the videorecording market consists of home users, who may or may not know what they are missing. If the demand existed for higher quality duplicates of motion pictures, lopping might not seem such a commercially viable alternative to producers and distributors of motion pictures in video formats.

As a method of transferring wide-screen images to the standard aspect ratio of television formats, **squeezing** can only be recommended for credits, as at the beginning and end of movies, and then only when there is nothing in the original shot that will suffer distortion by being squeezed. When there is action behind the credits, especially involving people, the distortion can be extremely pronounced and very annoying. The de-scoping of titles is never as disturbing as de-scoping landscapes or people.

Masking can be effective when the intention is to preserve intact the original composition of the wide-screen image. Masking is a rather "fussy" method, in that the compromise made to insure the integrity of the original image is rather obvious. One may sometimes see this method employed during the credit crawl of a wide-screen motion picture seen on television.

The last method we considered was **scanning.** We can recommend scanning as a method, because it enables the TV camera to look back and forth across the wide-screen, much as a person looks back and forth at the movie screen. Portions of the picture are still lost, but scanning at least provides more selectivity and control over this loss. The main drawback to scanning is the loss of simultaneity, the ability to watch many things happening at the same time, in the same broad compositional space in the wide frame, without cuts or other camera movements.

We can also recommend masking as a method, since it preserves the original framing and composition intact. As we have seen, however, masking does waste space at the top and bottom of the television screen, and further reduces the size of a picture which has been shrunk quite a bit already.

It is possible to mask an entire film from start to finish, and this may be the best method for many films, especially those of interest to students of composition and wide-screen theory. An acceptable compromise might be to mask or squeeze the titles and credits at the beginning and end of a film, and then to scan the remainder. While one of course loses the sense of simultaneous action that the wide-screen provides, scanning, as a more sophisticated form of lopping, at least enables us to be more selective about which portions of the picture we will sacrifice.

SUMMARY

To sum up: squeezing is appropriate for titles, although titles should be masked if they appear over live action, so as to avoid vertical distortion of human figures or landscapes. Scanning is a good compromise alternative for the remainder of the film, while masking of an entire film should be reserved for wide-screen movies with special or unique composition preservation requirements.

Videorecordings make available a wide variety of feature films to an audience which might not otherwise have access to this wealth of material. However, motion pictures undergo many changes, obvious and subtle, in the transition from large screen to small. Differences in screen aspect ratio can significantly affect the presentation of the original motion picture image. With an increased awareness of these changes, we can hope to increase appreciation for, and enlightened viewing of, these powerful and pervasive media.

ADDITIONAL READING

1. Benson, K. Blair. "Wide-Screen Scanning System for Film-to-Tape Transfer." Journal of the SMPTE September 1973, 82:739-742.

2. Kerbel, Michael. "Edited for Television--I: Scanning." Film Comment May-June 1977, 13(3):28-30.

3. Limbacher, James L. Four Aspects of the Film ([Limbacher?]: New York, 1968).

4. Patterson, Richard. "Highlights from the History of Motion Picture Formats." American Cinematographer January 1973, 54:40-43+.

5. "Transcan: New Method of Transferring MP Film to Videocassettes for TV." Filmmakers Newsletter January 1976, 9(3):54.

SUMMARY OF FILM TO VIDEO CONVERSION METHODS

ASPECT RATIO

The shape of a movie screen is determined by the ratio of its height to its width, known as the aspect ratio, with the height of the screen expressed as 1, and the width as some multiple of 1. Motion picture aspect ratio can vary between 1:1.65 up to 1:2.55. Television aspect ratio, on the other hand, has been fixed at 1:1.33, sometimes known as standard aspect ratio. Four methods are available for converting a motion picture in wide-screen aspect ratio to the standard aspect ratio of television: 1) lopping; 2) squeezing; 3) masking; and 4) scanning.

1. LOPPING

The TV camera is simply pointed at the center of the screen and left there, no matter what happens. This has the effect of lopping off the outside edges of the original picture with consequent loss of image information and compositional integrity.

2. SQUEEZING

An anamorphic lens is used on the wide-screen camera to "squeeze" the picture onto the narrower strip of movie film. The wide-screen projector employs a similar lens to spread the picture out to fill the screen. Removing this anamorphic lens has the effect of squeezing the picture into standard aspect ratio, but produces pronounced vertical elongation and distortion.

3. MASKING

The original wide-screen image can be proportionately reduced so as to fit entirely on the TV screen without distortion. However, this results in blank space at the top and bottom of the TV screen, which can be masked or filled with a decorative motif. In addition, masking further reduces in size a picture which has already been shrunk quite a bit.

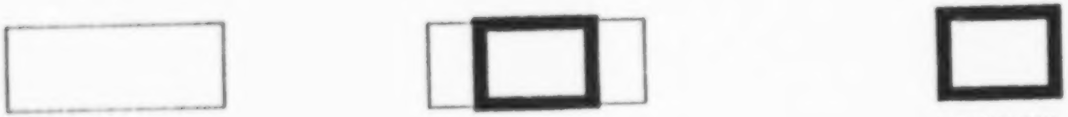
4. SCANNING

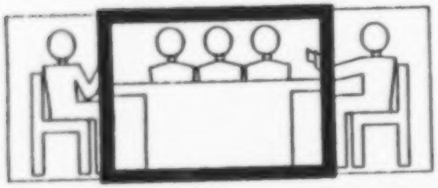
Scanning is a more sophisticated form of lopping. The TV camera pans back and forth across the wide-screen, and is thus more selective about what parts of the picture it lops off. Scanning can "follow the action" much as a person viewing the original wide-screen movie.

CONCLUSION

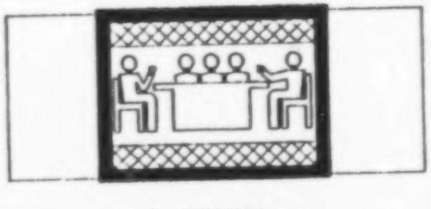
Squeezing is appropriate for titles, although titles should be masked if they appear over live action, so as to avoid vertical distortion of human figures or landscapes. Scanning is a good compromise alternative for the rest of the film, with masking reserved for wide-screen films with special or unique image composition requirements.

SUMMARY OF FILM TO VIDEO CONVERSION METHODS

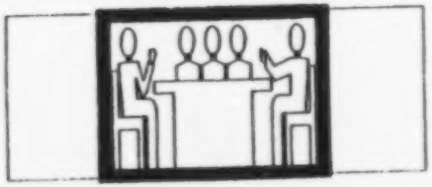

WIDE-SCREEN
ASPECT RATIO
TELEVISION
ASPECT RATIO



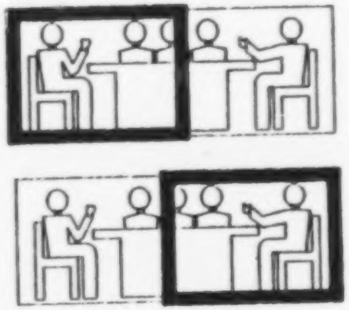
1. LOPPING



3. MASKING



2. SQUEEZING



4. SCANNING

Learning Perceptual Flexibility Through Figure—Ground Strategies in 2-D Design

by

MARY WITTE

One aspect of perceptual growth, creativity & problem solving is the **flexibility** with which we see things. The film Why Man Creates answered the question "where do ideas come from?" with "looking at one thing and seeing another". Davis (1986) in Creativity is Forever says "...regarding strengthening the ability to look at one thing and see something else, we are really talking about creativity itself".

Seeing things in new and different ways can lead to the discovery of ideas and the solutions to problems. Certain strategies using two dimensional design can help us see things in new ways, to develop perceptual flexibility.

One way to explore perceptual flexibility in design is to consider the figure/ground phenomenon in visual perception, specifically in two dimensional displays.

Two warm-up exercises can be used as an introduction to new ways of looking at, and manipulating figure and ground. The excercises involve the participants in experiencing the figure/ground relationship by using line to depict negative spaces, and by manipulating and reversing figure & ground with solid areas of black and white paper.

THE VISUAL DEMONSTRATIONS

Research tends to support the idea that the perception of certain aspects of visual form can be learned, and that practice in these perceptions leads to greater attention, discrimination, and flexibility in looking at visual form. The extensive visual demonstrations presented in the form of seventy-five slides, are intended to be 'practice' in the perception and discrimination of the figure ground concept, leading to increased flexibility of perception.

In our interaction with visual stimuli, we should distinguish between sensory stimulation and what Arnheim

(1986) refers to as perceptual challenge. The slides are intended to present the viewer with perceptual challenges.

The following concepts are demonstrated in the slides:

seeing figure-	why we discriminate 'figure' & 'ground' circle as a constant comparative figure examples in art and applied design
figure/ground-	various figure/ground phenomena figure/ground as a relationship reversing & flexibility in seeing positive and negative figures counterchange
looking/seeing-	figure interpretation ambiguous figures figure persistance, constancy
artistic demonstration-	examples in art and design circle series opening figure to ground in photos

CORROBORATION IN THE LITERATURE

While there is no unified definition of creativity, certain traits emerge in the multitude of studies of the creative process, creative people and creative products. A number of these traits appear repeatedly in the literature, and relate directly to this presentation and demonstration.

They are:

flexibility of perception, ideas, thoughts
understanding other points of view
learning to change your mind
reversing, alternating (inside outs strategy - method for taking point of view just opposite of the norm, the obvious)
changing perspective, viewpoint
ability to see relationships
resisting schema (avoiding 'hardening of the categories')
forget what you know, eliminate snap reactions
outgrow opinionitis
ability to cope with several ideas at once
transform, change (or reverse) physical characteristics
tolerance of ambiguity
analysis
synthesis
substitution, transferring
divergency

A FEW SOURCES AND AUTHORS

The following are brief notations relating specific sources in the literature to this project:

Osborn - idea spurring includes changing viewpoints and reversing, rearranging
Leff - playful perception includes reversing, flexible perception
Gordon - see things in new ways; mental transformation; perceive new relationships, meanings; make the familiar strange
Eberle - 'scamper' includes reversing
Edwards - direct perception, a different kind of 'seeing', is an integral part of the creative process
Kneller - to think creatively we must be able to look afresh at what we normally take for granted
Gregory - if brains work by representing, we need to know the code, the rules of representation; a very important point is that what we perceive and what we conceive can be different
Arnheim - what is needed is a convincing case made for visual thinking in general
Kandinsky - form is the boundary between one surface and another
Guptill - sometimes it is easier to draw the spaces and let the objects take care of themselves
Hill - there is not one of us who could not profit from the education of our vision

EDUCATIONAL IMPLICATIONS

A significant section of Davis's Creativity is Forever deals with the concept of "the creative process as a change in perception". Some basic questions to be answered are: Can we learn different ways of perceiving, of attending, of alternative recognitions, approaches, solutions ?

As an art educator I hold that certain strategies could strengthen one's ability to make perceptual changes and transformations. Certain experiences with visual design car affect the way we perceive the figure/ground phenomenon in 2-D displays, and in a larger sense, help us develop new ways of looking at things. These new ways of looking at things can help us generate ideas and creative approaches to problem solving.

BIBLIOGRAPHY

Adams, J. (1979). Conceptual blockbusting, a guide to better ideas (2nd ed.). New York: Norton.

Arnheim, R. (1986). New essays on the psychology of art. Berkeley: University of California Press.

Arnheim, R. (1971). Entropy and art. Berkeley: University of California Press.

Arnheim, R. (1969). Art and visual perception. Berkeley: University of California Press.

Arnheim, R. (1969). Visual thinking. Berkeley: University of California Press.

Austin, J. H. (1978). Chase, chance, and creativity. New York: Columbia University Press.

Barron, F. (1967). An eye more fantastical: Research Monograph #3. Washington, DC: National Art Education Association.

Behrens, R. R. (1981). Art & camouflage. Cedar Falls, IA: The North American Review.

Berger, J. (1980). About looking. New York: Pantheon.

Berger, J. & J. Mohr. (1982). Another way of telling. New York: Pantheon.

Berger, J. (1972). Ways of seeing. New York: Viking Press.

Blakemore, C. (1977). Mechanics of the mind. Cambridge: Cambridge University Press.

Bloomer, C. (1976). Principles of visual perception. New York: Van Nostrand Reinhold.

Brooks, C. R. & T. N. Clair. (1971). Relationships among visual figure-ground perception, word recognition, IQ, and chronological age. Perceptual and Motor Skills. 33(1),59 - 62.

Bruner, J. (1979). The conditions of creativity. In Consciousness: Brain, States of Awareness, and Mysticism. New York: Scientific American, Harper & Row.

Bruner, J. (1965). On Knowing: Essays for the left hand. New York: Atheneum.

Buswell, G.T. (1935). How people look at pictures. Chicago:

University of Chicago Press.

Cohen, E., & Gainer, R. (1976). Art: another language for learning. New York: Citation Press.

Cornock, S. (1984). Learning strategies in fine art. Journal of Art & Design Education. 3(2), 141 - 159.

Crowther, P. (1982). Merleau-Ponty, perception into art. British Journal of Aesthetics.22(2), 138 - 149.

Crozier, W. R., & Chapman, A.J. (Eds.).(1984). Cognitive processes in the perception of art. New York: Elsevier Science Publishing.

Davis, G.A. (1986). Creativity is forever. Dubuque, IA: Kendall/Hunt.

DeKoninck, J.M., & Crabbe-Decleve, G. (1971). Field dependence and rorschach white-space figure-ground reversal responses. Percpetual and Motor Skills. 33, 1191 - 1194.

Dennis, L.E., & Jacob, R.M. (Eds.). (1968). The arts in higher education. San Francisco: Jossey-Bass.

Dewey, J. (1934). Art as experience. New York: Minton, Bulch & Co.

Doczi, G. (1981). The power of limits. Boulder, CO: Shambhala.

Eberle, B. (1971). Scamper. Buffalo, NY: DOK Publishers.

Edwards, B. (1986). Drawing on the artist within, a guide to innovation, invention, imagination and creativity. New York: Simon and Schuster.

Edwards, B. (1979). Drawing on the right side of the brain. Los Angeles: J.P. Tarcher.

Forgus, R. H. (1966). Perception, the basic process in cognitive development. New York: McGraw Hill.

Gardner, H. (1985). The mind's new science. New York: Basic Books.

Gardner, H. (1982) Art, mind and brain, a cognitive approach to creativity. New York: Basic Books.

Gardner, H. (1973). The arts and human development. New York: Wiley.

Gibson, E. (1969). Principles of perceptual learning and development. New York: Appleton-Century-Crofts, Meridith Corporation.

Gibson, J. J. (1979). The ecological approach to visual perception.

Gombrich, E.H., Hochberg, J., & Black, M. (1972) Art, perception and reality. Baltimore: Johns Hopkinns University Press.

Goodman, N. (1968). Languages of art. New York: Bobbs-Merrill. York, 1968

Gordon, W.J.J. & Poze, T. (1980). The new art of the possible. Cambridge, MA: Porpoise Books.

Gottfried, H. (1984). A graphic survey of perception and behavior for the design professions. Architecture, 73(4), 88.

Gregory, R.L. (1974). Concepts and mechanism of perception. New York: Charles Scribner's Sons.

Gregory, R.L. (1973). Eye and brain: the psychology of seeing (2nd edition). New York: McGraw-Hill.

Haber, R.H. (Ed). (1968). Contemporary theory and research in visual perception. New York: Holt, Rinehart and Winston.

Hagen, M.A.(Ed). (1980). The perception of pictures. New YorK: Academic Press.

Hogg, J. (Ed). (1969). Psychology and the visual arts. Baltimore, MD: Penguin.

Kensler, G. (1971). Report on preconference education research training program for descriptive research in art education. (Project No. 0-0017). Washington, D.C.: National Art Education Association.

Kepes, G. (Ed). (1965). The education of vision. New York: George Braziller.

Koffka, K. (1935). Principles of gestalt psychology. New York: Harcourt, Brace & Co.

Kreitler, H., & Kreitler, S. (1972). Psychology and the arts. Durham, N.C.: Duke University Press.

Kronsky, B. J. (1979). Freeing the creative process: the relevance of gestalt. Arts Psychotherapy, 6, 233-40.

Leff, H.L. (1984) Playful perception. Burlington, VT:

Waterfront Books.

May, D. C. (1978). Effects of color reversal of figure and ground drawing materials on drawing performance. Exceptional Children, 44(4), 254 - 260.

McKim, R. (1972). Experiences in visual thinking. Monteray, CA: Brooks/Cole.

Mitchell, W.J.T. (Ed). (1980). The language of images. Chicago: University of Chicago Press.

Nierenberg, G.I. (1982). The art of creative thinking. New York: Simon & Schuster, Cornerstone Library.

Osborn, A.F. (1963) Applied imagination: principles and procedures of creative problem-solving. Third edition. New York: Scribners

Pappas, G. (1970). Concepts in art and education. Toronto: Macmillan.

Rogers, S. & A. Costall. (1983). On the horizon (picture perception and gibson concept of information). Leonardo, 16(3), 180 - 182.

Samples, R. (1976). The metaphoric mind. Reading, MA: Addison-Wesley.

Vernon, M. D. (1970). Perception through experience. London: Methuen & Co.

Von Oech, R. (1983). A whack on the side of the head. Menlo Park, CA: William Kaufmann.

Whyte, L. L. (Ed). Aspects of form. London: Lund Humphries.

Yochim, L. D. (1967). Perceptual growth in creativity. Scranton, PA: International.

Desktop Confusion

by

DARRELL G. BEAUCHAMP

Am I confused, or what? Just as I was beginning to see the light at the end of this tunnel called "computer literacy", I suddenly realized what I was seeing was the light of an on-coming train. That train is **Desktop Publishing**.

Recently I have begun to find my way around in the micro-computer maze of bauds, K's, floppies, interfaces, and turbos. My world, and my knowledge of the computer world seemed to be looking up. Or so I thought. Then came a whole new world of points, pitch, proportional spacing, non-proportional spacing, portrait and landscape printing, and orphans and widows. That new world is desktop publishing (DTP), a world just now beginning to unfold for me and for educators and other people who prefer publishing to the less attractive alternative.

Desktop Publishing already has become a hot "buzz-word". The process and expression, which is attributed to Paul Brainerd of the Aldus Corporation, began in 1982 when the Apple Macintosh, Apple Laserwriter printer and the Aldus Corporation software *Pagemaker* were combined to create the first printer-like text and graphics without the need for a professional printer (Alsop, 1987). Many still consider the Apple-*Pagemaker* combination to be the desktop industry standard (Burns & Venit, 1987, p. 121).

Alsop (1987, p. 111) writes, "ever since Gutenburg, publishers have been looking for a better, cheaper, and faster way to get words and pictures on paper." DTP, it is believed by many, might just be that better, cheaper, and faster way.

Better, cheaper, and faster certainly play a big role in the direction in which IVLA publications are heading. Tighter budgets and time constraints are just two of the many reasons IVLA editors are demanding "camera ready" manuscripts that require a minimum of typing and editing. As recently as two years ago, a style guide and manuscript preparation article appeared in an earlier volume IVLA edited readings (Braden, 1985). That article outlined some of the do's and don'ts of the art of preparing manuscripts for "camera ready" submission. Continuity of style, increased ease in editing, and the hope of an improved "look" for the IVLA publications of the future were just three of the purposes of that article. Those guidelines anticipated desktop publishing.

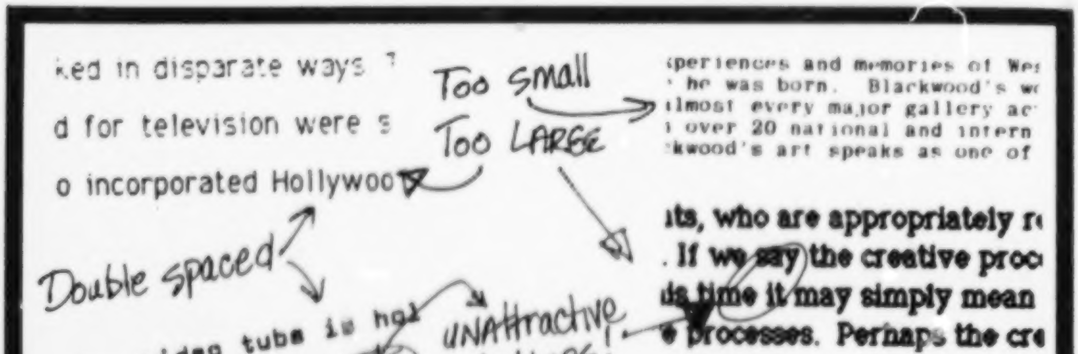
As many of us are finding, this new world of DTP is not as simple as it first appeared. "Printereese" is replacing "computereese" as the newest language the user today must master. Desktop publishing is not always THE answer, instead, it is often the source of the question. For example, questions emerge like "What computer do I use?", "Which software is the best?", "How do I merge pictures with the text?" (a very important issue to visually oriented people), and "What exactly is a laser printer?". Those are not unanswerable questions, but one thing is for certain, if user confusion is counted as an indication of a technology's success, then desktop publishing should be here to stay.

Effectively using DTP requires understanding that it is a "system" comprised of several independent components. The personal computer, software, and the printer make up the main parts of a DTP system. The trick to getting quality is putting together a system that is integrated. The computer, the software, and the printer must all be willing and able to work together if the final product is to be successful (e.g."computer A" must run "software B" which must work in unison with "printer C" which must work with "computer A"). Many users, for example, are finding out the hard way that the personal computer and the internal computer in the printer do not speak the same language. One computer overrides the other and the final results are not always predictable or pleasing.

THE LOOK OF THE BOOK

Major considerations and controversies in the world of DTP revolve around the final look of the product being printed. Professional printers are concerned, and rightfully so, that low-end DTP systems will give the art of printing a bad name. Their concern is that many people will be willing to sacrifice quality for price and shortened turnaround time (Burns & Venit, 1987). The sacrificing of quality is not necessary, however, and as stated elsewhere in this volume, so much progress has been made in the past few years that editors of publications like this one are now able to accept most manuscripts as "camera ready." Surely that is a desirable goal for IVLA.

Many of the articles published in this volume were accepted as "camera ready" and published "as is" (Braden, 1987). The editors willingness to accept articles "as is" places the burden of quality back on the writer. Looking through this volume, one is able to find a wide variety of quality in both writing style and printing. It is obvious that although the technology is there, not all writers have access to it. (See figures 1,2.)



ked in disparate ways
d for television were
o incorporated Hollywoo

periences and memories of We
he was born. Blackwood's w
lmost every major gallery ac
over 20 national and intern
kwood's art speaks as one of

its, who are appropriately r
. If we say the creative proc
is time it may simply mean
e processes. Perhaps the cr

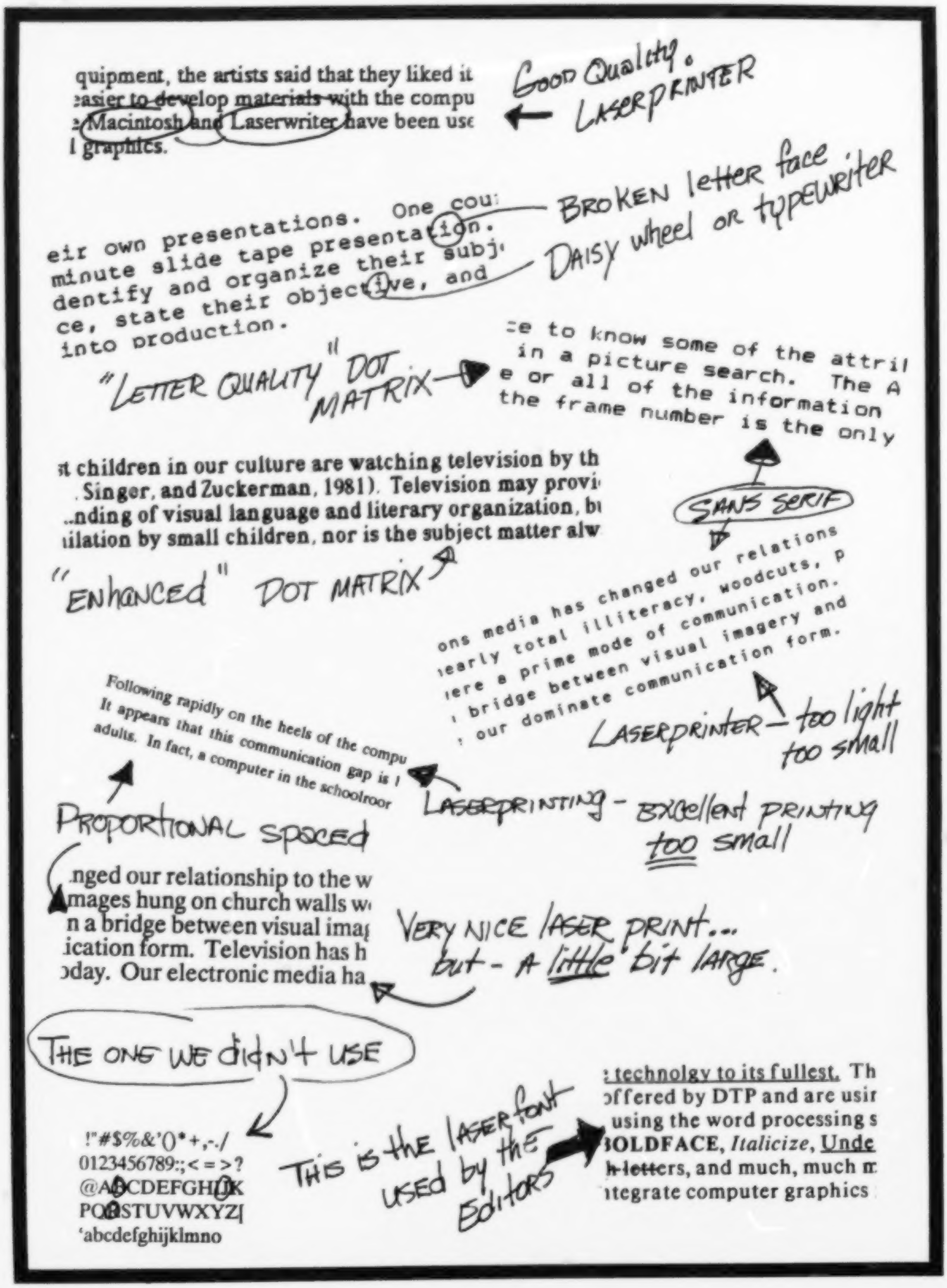
The video tube is not
ing ourselves as never
ave jested that Guttenb

library media spe
and integrated wi
sults. Automation
titive tasks in lib

not so much help but hindrance through information
their time turning the right information into knowledge,
ge improvement in this specific environment, the focus of
ing and wayfinding in libraries--including media centers.

Too small
Too LARGE
Double spaced
UNAttractive letters!
Typewriter letters uneven darkness
AN EDITOR'S DREAM COME TRUE

Figure 1. Examples of printing submitted



quipment, the artists said that they liked it
easier to ~~develop materials~~ with the compu
Macintosh and Laserwriter have been use
l graphics.

Good Quality.
LASERPRINTER

eir own presentations. One cou
minute slide tape presentation.
dentify and organize their subj
ce, state their objective, and
into production.

BROKEN letter face
Daisy wheel or typewriter

ce to know some of the attri
in a picture search. The A
e or all of the information
the frame number is the only

"LETTER QUALITY" DOT MATRIX

st children in our culture are watching television by th
. Singer, and Zuckerman, 1981). Television may provi
nding of visual language and literary organization, bu
ilation by small children, nor is the subject matter alw

SANS SERIF

"ENHANCED" DOT MATRIX

ons media has changed our relations
nearly total illiteracy, woodcuts, p
were a prime mode of communication.
bridge between visual imagery and
our dominate communication form.

LASERPRINTER – too light
too small

Following rapidly on the heels of the compu
It appears that this communication gap is
adults. In fact, a computer in the schoolroo

PROPORTIONAL spaced

LASERPRINTING - excellent PRINTING
too small

nged our relationship to the w
images hung on church walls w
n a bridge between visual imag
ication form. Television has h
oday. Our electronic media ha

VERY NICE LASER PRINT...
but - A little bit large.

THE ONE WE didn't USE

!"#$%&'()*+,-./
0123456789:;<=>?
@ABCDEFGHIJK
PQRSTUVWXYZ[
'abcdefghijklmno

THIS is the LASER font USED by the Editors

technolgy to its fullest. Th
offered by DTP and are usir
using the word processing s
BOLDFACE, *Italicize*, Unde
~~h letters~~rs, and much, much m
ntegrate computer graphics

Figure 2. Additional Examples

Authors submitting articles for publication can generally be placed in one of three categories:

1. Effectively using the technology to its fullest. These writers are taking advantage of the possibilities offered by DTP and are using their system to integrate words AND pictures. They are using the word processing software to its fullest potential to do such things as **BOLDFACE**, *Italicize*, Underline, Subscript$_{\text{IVLA}}$, Superscript$^{\text{IVLA}}$~~, Strike through lett~~ers, and much, much more. They are using their graphic package software to integrate computer graphics into their articles.

2. Using the technology in a limited fashion. Writers falling into this category are taking advantage of many of the same things as writers in category one but are limited to using the word-processing to its fullest and then adding visuals via traditional methods (i.e. leaving space for visuals and pasting them into the article). Most writers fall into this category at the present time. At best, writers are using quality printers to print their text stored in the computer. At worst, many writers in this category are using the word processor to capacity and are then forced to print their text using a unacceptable printer (Dot Matrix, etc.). The writer who has made the "half-step" into this second category usually obtains printed results that are far worse than writers not using the technology.

3. Not using the technology. A few of the manuscripts submitted for publication were written using a typewriter and standard "elite" typing element. Unless the article was extremely "clean", many of the articles falling into this category were word-processed by the editors to improve their "look". Papers printed using a typewriter are generally clean yet corrections and format changes require the paper to be completely re-typed.

The Future

What does the future hold for IVLA and desktop publishing? It is possible that in as few as 2-3 years, most writers will have moved from using DTP in a limited fashion to taking full advantages of its power and possibility. IVLA authors should be especially anxious to incorporate graphics and visuals into their writing. As Alsop (1987) has noted, although the world of desktop publishing is very impressive today, tomorrows possibilities are unlimited. That is, once we overcome the confusion.

Reference

Alsop, S. (1987, February 10) Desktop publishing without HYPE. *PC Magazine, 6 (3)*, 110-115.

Burns, D. & Venit, S. (1987, February 10) Muscling in on the Mac. *PC Magazine 6 (3)*, 119-178.

Braden, R. A. (1985) The stylish look: A format for visual literacy writers. In N.J. Thayer & S. Clayton-Randolph (Eds.) *Visual Literacy: Cruising Into the Future*. Bloomington, IN: Western Sun Publishing Co., Inc.

Braden, R. A. (1987) Writing about visual literacy. Elsewhere in this volume.